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Symposium on the Role of the Pediatrician in National Defense

FOREWORD

At the Annual Meeting of the Academy in Boston, a special symposium on National Defense was held Thursday evening, October 9, with the President, Dr. Richard M. Smith, presiding.

The speakers were Dr. Philip M. Stimson of New York, Chairman of the Academy Committee on National Defense, Dr. Harold C. Stuart of Boston, who has recently returned from service with the Rockefeller Foundation Health Commission in Unoccupied France, Dr. Martha Eliot, Associate Chief of the Children's Bureau, and Dr. Thomas Parran, Surgeon General, U. S. Public Health Service.

THE ACADEMY AND NATIONAL DEFENSE

PHILIP M. STIMSON, M.D.
NEW YORK, N. Y.

ORGANIZED in the summer of 1940 as the Committee on National Defense and Relief and under the temporary Chairmanship of Dr. Borden Veeder, your committee has gradually grown during the intervening year in number of members and in the scope of its activities. In the spring of 1941 its title was changed by the Executive Committee of the Academy to the Committee on National Defense. At the present time, the field of action of the Committee lies in the following five directions, for the most part covered by Subcommittees.

1. Pediatric Care of Refugee Children Brought to America Under the Auspices of the United States Committee for the Care of European Children.

Some 700 English children were given careful physical examinations in the summer and autumn of 1940, and throughout the winter individual cases and small groups received some attention. In June, 1941, 101 Continental evacuees were examined and 53 more came on Labor Day. Practically all of this work has been done in New York City, although known instances of extensive assistance have been given in other parts of the country, notably Boston, and probably a great deal of pediatric care has been contributed to the United States Committee's widely

scattered children of which we have no record. Dr. Rustin McIntosh is Chairman of this Subcommittee and his office has lists of pediatric volunteers living in Manhattan, the Bronx, and neighboring districts. Dr. Carl Laws has similar lists for Brooklyn and Queens and also has spent a considerable amount of time in this activity. The services of thirty or forty different doctors have been used up to the present time. While the scope of this job has been for all of us far less than was originally anticipated, nevertheless the service rendered has been a real one, and even more than this, the readiness to serve of pediatricians, both members and nonmembers of the Academy, has earned the grateful appreciation of the sponsoring organization.

The United States Committee for the Care of European Children hopes to be able to bring in possibly fifty more Continental children each month this winter, but the cost is high and the difficulties great. It is of interest to note that curiously enough the Continental children have been arriving in unusually good condition, presumably due to the excellent care they have been receiving since they have been assembled largely through the efforts of the Friends Service Committee in Southern France. An interesting observation made by the examiners has been that most of these children have marked calluses on their feet as the result of not having had proper footwear for some months prior to their evacuation. We have heard no stories of abuse, but some of the children have been able to give vivid accounts of harrowing experiences.

2. Nutrition.

A subcommittee consisting of Drs. Katherine Bain, Alan Butler, Edwards Park, William H. Sebrell, and Joseph Wall, as Chairman, has been formed to cooperate with other agencies in the enormous task of improving the nutrition of the American people. Drs. Bain and Sebrell give this Committee excellent connections with federal agencies. Members of this subcommittee, together with a number of other members of the general committee on National Defense, and several officers of the Academy attended and participated in the National Conference on Nutrition held in Washington in May, 1941. Dr. Wall, on invitation from Dr. J. S. McLester, Chairman of the National Research Council's Subcommittee on Medical Nutrition, is participating in a study of criteria for the recognition or suspicion of early deficiency states in children, adolescents, and adults. Another activity of this subcommittee has been the sending out of questionnaires urging appointment of pediatricians to the Defense Council of each state, and fifteen pediatricians have already been appointed. The Academy's State Chairman himself has been appointed in a great many instances.

3. Cooperation with the Children's Bureau.

Dr. Martha Eliot having expressed a desire for young pediatricians who would take Civil Service Examinations and then help in the work of her bureau for the furtherance of child health, particularly in so-

called "mushroom" communities that have sprung up in connection with war industries, Dr. Clifford Grulee has had compiled in his office very extensive lists of the pediatricians of the country, including pediatric interns and residents, and young practitioners who have not yet become Diplomates of the American Board of Pediatrics. Copies of these lists have been sent to Dr. Eliot so that she can circularize the doctors with information about the needs of her bureau and possibilities for usefulness in that connection. The same lists were supplied to Dr. Stokes for use in activity No. 4. Dr. Katherine Bain tells us that salaries will range from $3,200 to $5,600, depending upon the abilities and experience of the doctor, and that applications to take the necessary Civil Service Examinations are receivable up to November 15.

4. Pediatricians in the Army.

In the first World War many of the pediatricians were used indiscriminately in the army in all sorts of medico-military activities for which their specialized training was unsuited. It seems advisable to try to have pediatricians spared from being used as regimental medical officers, hospital supply officers and the like in the present emergency, but rather to keep them available to support civilian needs. Men especially trained in contagious diseases and in the field of nutrition could be of value to the armed forces. To cooperate with the army in the provision of such men, a subcommittee has been formed consisting of Drs. Robert A. Bier, Harry A. Donnelly, Douglas D. Martin, and Joseph Wall, with Joseph Stokes, Jr., as Chairman. A questionnaire has been sent to 2,700 pediatricians, and information is being obtained from those who have had training and are available for service as diagnosticians attached to army hospitals. Some assurance has been received from army authorities that men will be placed properly, and, if at all possible, they will be kept at fixed posts with a minimum of shifting. Over 500 responses from interested pediatricians have been received. A notable fact already revealed is that, of the approximately 100 pediatricians now commissioned in the Army Medical Corps, only 3 or 4 are being used in connection with the diagnosis of contagious diseases. That there is need for such diagnosticians is evidenced by a report from one of the present base hospitals that 63 cases at first all reported as measles, on subsequent review proved to be 60 cases of rubella and only 3 of measles.

5. Cooperation with Plans for Civilian Defense.

The field of activity for the organized pediatricians of the country in connection with possible mass evacuations and with disaster relief has not yet been definitely worked out. Contacts have been made with Mayor LaGuardia's National Committee for Civilian Defense and particularly with Dr. George Baehr, the Chief Medical Officer of that organization. He urged the membership of the American Academy of Pediatrics to see that on each state's Defense Council there be adequate

medical representation, and that in each local community, under state leadership, there be a chief of emergency medical service with time and interest to push through a program guided from Washington, of medical, nursing, and material preparedness. Certain communities, notably Boston, have gone ahead with local plans, and pediatricians, notably our president, Dr. Richard Smith, and Dr. Lendon Snedeker, have been very active in this work.

That there must be great cooperation between communities and between states in these plans is evidenced by the following fact. If Boston children should have to be evacuated they would almost certainly have to cross state lines even beyond New York. It must also be remembered that the actual evacuation of children is accompanied by the need of much pediatric care, not only in the examination of children before departure, but also in their supervision en route and in their health control after arrival in undoubtedly overcrowded communities.

Thus in these five connections, comparatively few members of the Academy have been actively engaged, and the membership of the Committee is still relatively small. Doubtless many more pediatricians the country over are already gladly giving generously of their time, professional training, and energies to their country's service, but opportunities are still many and varied. The Committee's report has outlined several fields of activity and the authoritative leaders who have accepted the Academy's invitation to speak to us presently this evening will doubtless point out additional ways by which pediatricians can best put their special equipment to the greatest advantage in this present world crisis.

We need ideas, we need vision, we need a courageous enthusiasm; and above all, we need action. The Committee on National Defense invites the cooperation of all the Fellows of the Academy. If, as you listen to the speakers tonight, you see where you can add to your present activities in behalf of your country, we urge you to be up and doing. If it is a new activity for organized pediatricians, tell a member of the present Committee about it and we will try to undertake it with you on the new subcommittee. If it is help for a present line of endeavor, we welcome your cooperation. If it is in your home community, we urge your tying up with the local branch of your state's Defense Council as suggested by Dr. Baehr of the National Office of Civilian Defense.

Civilian defense? national defense? Where does defense begin? Unfortunately there is some difference of opinion on that. But what is it that we would defend? Here we all agree—our homes, yes, our families of course, but above all, our democracy, our freedom, our liberties, our precious right to try any road to happiness and achievement that pleases us, to make of ourselves what we will; in short, our right to grow.

But with our rights, we have our duties. As Eve Curie said of the British, "England is one of the very rare democratic countries where

the young people learn not only about their rights, but also about their duties toward their country and toward themselves. In England, the education of character is given as much attention, if not more, as the accumulation of knowledge, courage is put as high as intelligence, and self discipline is stronger than law."

Just so! Even with declared war, we shall most of us probably not be drafted. While our manner of living is shortly to be materially changed by taxation, certainly for some time yet we shall not be compelled by law to alter our medical lives. It is an inner compulsion now which makes each one of us want to help.

As Montesquieu said, "Liberty does not consist in doing what one pleases—Liberty can only consist in being able to do what one ought to do."

Thus, as we listen to Dr. Stuart, Dr. Eliot, and Dr. Parran, let us each say to himself, "What can I do? Where do I fit in?" Your Committee on National Defense at present consists of only a dozen or so. Shall we not have the entire fellowship of our Academy so actively occupied in the broad defense of home, in the prevention and relief of suffering, in the preservation of the liberties we hold so dear, as thus to make of the Academy one large Committee on National Defense.

THE NEED FOR AN EFFICIENT CHILD HEALTH SERVICE IN A WORLD AT WAR. LESSONS FROM FRANCE

HAROLD C. STUART,* M.D.
BOSTON, MASS.

ANY references made to France during this talk should be taken to apply only to Unoccupied France in so far as my own personal experience went, because I did not enter the occupied zone. From frequent contact, however, with those who came from Paris, I was led to believe that conditions were very much the same in the occupied area except that possibly the health services for children, of which I will speak, were more highly developed in Paris and in some of the large northern cities.

As we went through Spain in November on our way to France, conditions were considerably worse than we found in France on our arrival. On the way out we had reason to believe that conditions in Spain had improved considerably, whereas conditions in southern France had been degenerating rapidly. Word from those with the American Friends Service and others who came out of Belgium indicated that, from a food standpoint, conditions were considerably worse in Belgium than they were in southern France.

Each individual with whom one talked felt that the particular place where he had worked was in the worst situation of all. I am not making any such claim for Unoccupied France where I spent most of my time, but I will say that conditions were pretty grim there during the winter and spring of this year. Unquestionably, they have become worse since I left in June, and everything gives promise of their being far worse, from a nutrition standpoint at least, during the winter that is ahead.

France was totally unprepared for what took place and did not know where to turn for food for her underfed children except to friends in Switzerland and the United States, the two countries that were prepared to give. The United States as a source of relief has now been pretty well closed by the refusal of the Germans to allow the American Red Cross to send more food. Within the past few days I have heard that the American Friends Service Committee is starting to raise money in this country to buy 650 tons of milk, which it is able to obtain in Switzerland and transport to France, so that some relief work may continue. The fact remains that the prospect for the health and nutrition of the children in France looks very dark indeed.

I went to France with the Rockefeller Foundation Health Commission to be attached to the French Public Health Service in order to study the situation in regard to the nutrition of the population. After some delay I was sent to Marseilles to help conduct a nutrition survey, because

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conditions there seemed to afford the best possible opportunity. Dr. John Youmans of Vanderbilt University was in charge of these nutrition studies. He dealt primarily with the laboratory procedures and the clinical examinations of adults, while I was responsible for the studies of children and for the reading of x-ray films.* Our work was constructive from the standpoint of public health organization, but it was not directly involved with relief, which disturbed many French people whom we met. We were asked very promptly to serve as advisers to the American Friends Service and the American Red Cross, and in that way were able to participate in relief work in so far as time permitted.

The health of the people in France last winter was far better than had been expected under the circumstances. There were no major epidemics of respiratory or intestinal diseases. Even in the concentration camps, in which health conditions were very unfavorable, the mortality was high among the very young and among the very old, but the people in the middle years survived in a surprisingly satisfactory manner. Vital statistics dealing with recent conditions in the camps and in the cities of France were unobtainable, so that it is hard to give figures, but the mortality was not as greatly increased as had been feared. It is doubtful that this favorable condition can continue, and it will be surprising if more serious epidemics do not occur throughout France during the coming winter. With large groups of refugees transplanted from their homes and living in crowded quarters with very little to live on; with sanitary conditions bad at the start and becoming worse owing to inadequate sanitary and health services, with no fuel and very little clothing available during a very cold winter, the situation was obviously favorable for the development of epidemics.

Our Commission assisted in setting up a so-called "Institut de Récherches d'Hygiene" under the patronage of the Department of Health and Family, and the first undertaking of this Institute was to conduct a survey of a sample of the population of Marseilles. This survey revealed less deficiency disease than had been anticipated. There was a good deal of rickets of the stage revealed only on x-ray films, but we were led to believe that early rickets had been common before the war, because it had not been the habit of the French people to adopt preventive measures. There were also minor evidences of other deficiencies, such as the visual and skin changes associated with lack of vitamin A.

There were approximately 200 children under 12 years of age in the random sample studied. None of these showed more than the earliest clinical manifestations of deficiency disease except for a few infants with active clinical rickets. This was in spite of the fact that the supplies of the vitamins, of animal proteins, and of calcium were very low and often very poorly provided in the diets of the individuals

*The first report of these studies has been submitted to the Journal for publication under the title "Studies of the Physical Characteristics of Children in Marseilles, France, in 1941."

studied. However, the determinations of blood concentrations and other clinical or laboratory tests presented much evidence that the stores of food substances had been greatly depleted.

Our feeling was that the deprivations of important foods had not been going on for a long enough period of time or had not been great enough in amount to lead to clinical disease. With a continuation of the conditions through another year, it is very probable that disease will become more and more frequent.

It is hard to draw conclusions from the experiences of France as to what may happen here and what should be done in the way of special preparation to protect children against the hazards of war. The conditions which were primarily responsible for the present plight in France cannot occur here. It is fantastic to believe that any nation could remove the major portion of our freight cars, loaded with livestock and other food supplies, to a foreign country, thus completely disrupting transportation and interfering with the normal supply of food to the various sections. It is inconceivable that the major portion of our able-bodied young male population could be taken to concentration camps elsewhere, leaving the country lacking in man power for farming and industrial purposes. It is possible, however, that our transportation system will be overworked and that we will have to meet a situation in which there is a shortage of important food substances in certain parts of the country. There may also be a labor shortage in this country which will curtail the production of food. We know at least that our public health services are far more adequate than were those of France.

I would like to call your attention to two or three of the principal defects in the situation in France which made it impossible for the government to cope with these most difficult problems as they arose.

In the first place, a country needs at all times, but especially during emergency situations, a personnel attached to its public health service well trained in the technical fields and able to arrive at the facts and to draw up a rational program. It is not merely a question of being prepared to meet specific situations which can be anticipated, but also of being generally competent, so that unforeseen developments may be handled with effectiveness and dispatch. The French public health services were lacking in trained personnel. We feel confident that the personnel of our various services is being improved rapidly, and we look to our government to see to it that our organizations will be able to meet any situation that may arise. Individual members of this Academy may be able to render valuable assistance to the government in technical fields in which they are fitted to give advice on health problems, and they stand ready to offer their services to Dr. Parran, Dr. Eliot, and others, as they may be needed.

Another difficulty which was apparent in France was that the medical profession was not aware of the importance of nutrition as a health problem. With notable exceptions, they showed little knowledge of

food values and the modern concepts of nutritional requirements. In order to deal effectively with a serious food shortage, it is essential that members of the medical profession at least know what should be done and be able to give sound advice. In this respect again, we are far better off than was France, but unquestionably there is room for a good deal of extension education among the physicians of this country as to the essentials of diet, the requirements of children, and how to meet serious shortages in the best possible way. One way in which the members of this Academy could certainly make a real contribution to preparedness in this country would be to help disseminate a more adequate knowledge of nutrition among the medical profession.

A third difficulty in France was the lack of a general public health education program which reached down to mothers and guided them in their care of children. One encountered among them, as among the physicians, the most surprising superstitions and ideas as to what was and what was not good for children. It seems essential that there be a plan of health education which reaches a large proportion of the families in the country and which gains the confidence of the people. The public health service in France tried to carry out a nutrition program, largely by announcements in the newspapers or over the radio, but this propaganda seemed to have little effect upon the habits of the people. There must be a readiness on the part of the public to accept advice from a group which can speak with authority and which can command confidence. I urge that the members of the Academy take an active part in promoting health education, particularly in respect to nutrition.

In France general health services for children were not widely available nor generally accepted. There were many private organizations in the large cities that had been doing good work for young infants for many years and were continuing to do very creditable work in the emergency, but the great majority of children were not obtaining the benefits of health supervision from any source. It would seem that one of the strongest factors in assuring the protection of children in this country under any emergency would be to have a very much larger proportion of them regularly enrolled for health service under some competent medical supervision. We should look to our able leaders in the Public Health Service to draw up the plans and the programs to meet emergencies. We should also be prepared to act upon sound advice when it is given and to pass on that advice to the mothers and children in our communities. I feel quite confident that few situations could arise that could not be dealt with in a satisfactory manner if there were close cooperation between the government health agencies, the practitioners of medicine, and the pediatricians. A large proportion of the children in this country could benefit by the advice which these groups could give today, and the need for this advice may become more pressing in the days that lie ahead.

CHILDREN IN THE DEFENSE PROGRAM

MARTHA M. ELIOT, M.D.
WASHINGTON, D. C.

SINCE the chairman of this committee left me free to choose my own topic, I have elected to give you a brief report of health and welfare services for children today in the light of the defense program. First I should like to give you some idea of the existing need for increased service to children in the so-called defense areas and in the much larger areas outside; second, I should like briefly to call your attention to what has been done to try to meet the need; and third, I should like to point out the type of planning that is under way in case the present defense situation should develop into a more acute emergency. To do this with any degree of thoroughness, however, would take the rest of the evening. Obviously, I can just touch on some of the high spots.

Some weeks ago we received at the Children's Bureau, among other reports that come in periodically from state health and welfare departments, a report that is pretty typical of the present situation in many states, and I should like to read you a few excerpts. It comes from the health officer of a state in the south central part of the country, in which real effort has been made to meet defense health needs but which is handicapped by lack of funds and personnel and in other ways. The situation described is no different from that in many other states.

May I read a bit of this report?

"The greatest problem at this time is in a military area, an army post situated in County X, near the town of L. During a relatively short period of time, this army post which normally consisted of 7,500 military men has increased to 45,000. The population of the town of L has increased from 18,000 to 25,000. The population of the county increased from 40,000 to 100,000. The county covers 1,096 square miles of territory.

"As the population increased, the active practicing physicians in the town decreased, from 14 to 12, or one physician to 7,000 people. As would be expected, the shifting population has resulted in many health problems; namely, increase in rent; very poor housing, especially on the outskirts of the town; increase in venereal disease; increase in prostitution; increase in illegitimacy; overcrowding of the schools; and increase in communicable disease."

The report goes on to say that the state health department in an effort to meet these problems "has now established a county health unit in this county, which it did not have before, providing one health officer, four sanitarians, and four public health nurses." This means that there is now one nurse for each 25,000 people. In making this report the

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health department rightly felt that great progress had been made by providing this staff, but that there is still further need. This need is apparent when one realizes that to provide even the minimum number of nurses that would be considered acceptable, that is, one nurse for every 5,000 persons in the population, 20 nurses would be needed instead of 4; and to provide a really adequate number of nurses, 40 would be needed for the present population of the county.

The report further explains that child health clinics have now been established at four points in the county, each to be held once a month, and that it has been planned to provide school medical services throughout the county under the auspices of the health department. The report does not explain, however, how a single county health officer expects to manage all this work.

In addition to describing this existing defense area, the health officer states that two additional defense establishments are proposed: one an army cantonment in County Y which will include up to 45,000 men; the other a $52,000,000 powder plant in County Z. This latter county has a population of 21,000 people. The powder plant will be situated near town C, which has a population of only about 500 people. It is estimated that this powder plant will employ between 6,000 and 10,000 civilian workers. At present there is in this county only one physician, who is 75 years old, and there are no hospital facilities. The nearest hospital of good size is forty miles away. The nearest hospital of any kind is twenty-seven miles away; it, however, has only thirty-two beds and four bassinets.

The situation described by this health officer can be duplicated many times. Surprising as it may seem to you, it is impossible to get an exact report as to the total number of defense areas. Apparently it is somewhere in the neighborhood of 400. Some of these are military, some industrial, others shipbuilding. Some defense activities are located in a single community, but practically all are having an unfortunate effect on health and welfare of children over a wide territory, sometimes covering as many as ten to twelve counties. These defense areas, as is well known, are concentrated largely in the coastal states and in the northeastern and central industrial states. There is no state, however, without at least one major defense area. One southern state has a major defense activity in each of twenty-five counties.

The problems that result are pretty obvious. Migration of families has increased very greatly, with all its concomitant hazards to the health and welfare of children. Rapid increase in population in the defense areas has resulted in a very serious degree of crowding and other housing problems. The fact that federal housing projects have been approved for more than 300 defense areas is some indication of the urgency of need. Trailer camps are found everywhere on the fringes of the defense areas. I do not need to tell you what life in a trailer camp

means to children or to their mothers when a one-room trailer becomes their permanent family dwelling place. The mushroom growth of tiny villages and towns into bustling cities almost overnight carries with it even worse implications, for it has not been possible for the child health and child welfare services of nurses and doctors and social workers to keep pace with the physical and population growth of the towns. Nor are there sufficient school or recreational facilities. Many children in the defense areas are footloose and are subject to exploitation of many kinds. Some have entered industry before the legal age; some young children have been exploited by commercial firms in the street trades; petty stealing and other delinquencies are increasing. More child welfare workers are urgently needed to help meet these social needs of children.

Health conditions for infants and young children are often serious. Many of the defense establishments have been located in counties where there is no full-time health unit, no child health conference, no prenatal clinic, no public health nurse. It often happens that one public health nurse, already faced with a case load far too great to permit good work, is suddenly overwhelmed with an enormous increase in families, practically all of whom need her help at once because of the inadequacies of their living arrangements and their need for advice about children or a pregnant woman. Sometimes, in a place where 1,000 people were already inadequately provided with child health and welfare services, 10,000 more have suddenly settled without any increase in health or medical or welfare personnel.

Provisions for maternity care are utterly inadequate in many of the defense areas. A shortage of doctors is forcing women to go back to untrained midwives; a shortage or lack of hospital facilities is forcing women to be delivered at home, sometimes under very bad conditions, even in trailers at times. City and county public hospitals are finding themselves wholly unable to handle the load of maternity patients. Nurseries for newborn infants are greatly overcrowded. Women are sent home three or four days after delivery, or sometimes even within twenty-four hours, with little or no assurance that a public health nurse will be able to visit them. Add to all this the withdrawal of physicians, including pediatricians, from the civilian population to enter the army or navy, and the situation becomes still more difficult to handle.

Recently still another problem has been rearing its head. In many industrial cities we are now confronted with the problem of daytime care (or sometimes nighttime care) of children whose mothers are working in the defense industries. The health supervision and daily care of children in day nurseries and nursery schools and in recreation centers for school children, play schools, and social settlements must receive increasing attention. Reports now show that day nurseries are overcrowded and are being pressed to take in even more children, lowering

standards of care that are already lowered to the limit. Professional workers to staff additional day nurseries and nursery schools are even now difficult to find.

During this past year the states and localities have been struggling with these problems, and some headway has been made. I hope Dr. Parran will point out that a number of additional health officers and public health nurses have been placed in defense areas by the United States Public Health Service, and that very considerable sums have been spent for sanitation in and about the defense areas. The state health and welfare departments have stretched their maternal and child health funds and their child welfare funds to meet some of the most acute of the problems of child health and welfare and of maternity, but compared with the real size of the problem the provision made is very small. The health officials have not felt justified in taking away service from a nondefense area to help a defense area. The industrial areas are making great efforts to meet the new needs which the increasing population has forced upon them, but even were money available, the shortage of trained personnel makes quick response to need impossible.

I have dwelt on the needs of these special defense areas because of the acuteness of some of the problems, but I would not want to leave the impression that all is well for children in the towns and rural areas outside the defense areas, for the need is very urgent in many other communities. I wonder how many of you realize that in only about one-fifth of the 2,400 rural counties have public health authorities made child health conferences or prenatal clinics available. Even in the full-time county health units the situation is far from satisfactory, for in only about two-fifths are there child health conferences or prenatal clinics. In only 525 of the 2,400 rural counties is there a social worker equipped to render child welfare services.

Most of us know that large cities are, as a rule, pretty well provided with health and medical services for children. But I wonder if you realize that one-fourth of the small cities (10,000 to 25,000 population) have no child health conferences and that nearly one-half have no prenatal clinics? School medical services nearly everywhere, and especially in rural areas and in small cities, need to be greatly strengthened. Do you realize that only 2 per cent of the cities and towns with less than 10,000 population have an outpatient clinic to which sick children may be sent?

In the light of all this, we may well ask ourselves whether we are providing adequately for the children in our democracy. Obviously we have not yet completed even our basic network of health and welfare services for children covering every county and city in the United States. We have no such universal backlog of maternity and child welfare service as that which Great Britain has established since the last World War. We cannot yet say, as can the health authorities in England,

that practically no mother, even in the rural counties, needs to go more than six or seven miles to find a child health conference.

If we should be faced suddenly with even more serious defense situations than exist today and were forced to provide special protective services for children in areas of military danger or to remove children and mothers from certain areas because of potential or actual danger, we would be confronted with a task for which we are clearly ill-prepared. The deficiencies in child health and welfare services and the shortage of professional personnel in the smaller towns and cities would suddenly become highlighted as crucial defense problems because these are the communities to which many children from the large cities would have to be sent. Though there is, perhaps, relatively little reason to believe that such a widespread evacuation of children as that experienced in Great Britain would ever be necessary in this country, it is impossible to say what may happen. There is every reason, however, why we should at once put our child health house in order, provide supplementary services where needed, and have ready the blueprints of a plan of action in case of emergency.

Recently, with this in mind, the Directors of the Office of Civilian Defense and the Office of Defense Health and Welfare Services jointly appointed a Committee on Health and Welfare Aspects of Evacuation of Civilians. This committee, representing the Children's Bureau, the Office of Education, the Bureau of Public Assistance of the Social Security Board, and the Public Health Service, as well as the two defense agencies, has been instructed to study the problem and to report to the defense agencies on suitable plans of procedure. Because of the interstate and federal aspects of the problem, it is hoped that state and local planning will not be crystallized until the committee makes its report and has an over-all plan to propose to the defense agencies. The committee is wholly aware of the complexity of the problem and of the relative difficulty of caring for children in the reception areas as compared with the process of moving them. It is also aware of the great necessity of making adequate provisions for people who remain behind in the danger areas.

To those of you who are impressed with the urgency of preparing plans for protection of children in case of emergency, may I say that committee work is going ahead steadily. To those of you who come from places that might be reception areas, I would say the same thing. The committee is anxious to develop a sound and a useful plan rather than one hastily put together. This will take a little time.

When your chairman wrote to me not long ago he asked me to include in my remarks any suggestion that I might have for Academy work. I have a few and, if I may, I will take a moment or two more to present them briefly.

What can Academy members do for children in the defense program?

In order to fulfill the nation's obligation to protect the health of all children as a primary measure for defense, as well as to focus attention on the immediate, urgent needs of children who are now or may be later affected adversely by existing defense activities or more serious emergency situations, I would suggest the following to the members of the Academy of Pediatrics:

I. That each state group of Academy members

1. Arrange, if possible, for a committee or subcommittee on child health under the state defense council that will focus attention on problems of children and cooperate with other defense council committees concerned with such problems as mass feeding, evacuation, and emergency medical service.
2. Include in the committee:
   - A. Director of maternal and child health in state health department and selected large city or county health departments
   - B. Director of school medical service, state and city
   - C. Director of public health nursing in state health department
   - D. State supervisor of child welfare services in state welfare department

   as well as representatives of the pediatricians, the general practitioners in rural areas, and of other appropriate medical services.
3. Map out a program of child defense activities according to the need of each state in collaboration with the staff of the defense council and in cooperation with other children's committees, such as the White House Conference committee.
   - A. Defense areas
     - (1) Determine extent of defense activities in the state which may be affecting lives of children. The areas concerned include:
       - (a) All defense industrial areas; those which are expansions of earlier industries; those which are new mushroom growths in small towns or rural areas where little if any industry existed before
       - (b) All shipbuilding areas
       - (c) All areas near military establishments
     - (2) Secure information for each area on
       - (a) Births and child population by major age groups
       - (b) Centers of concentration of population in the area, trailer camps, etc.
       - (c) Availability of milk and other protective foods; use of surplus commodities, etc.
       - (d) Health, welfare, educational, and recreational facilities.

(3) Make a careful survey of child health facilities and services in each community in each defense area and of the expansion necessary to keep pace with growth of population. Particularly this survey should include detailed study of the adequacy of service provided (amount, scope, and quality) in proportion to the number of children to be served in:

(a) Child health conferences
(b) School medical services
(c) Public health nursing services (including visiting nurse and school nurse services)
(d) Medical care for children (including pediatric service) provided by
Hospitals and outpatient clinics
Private practice
(e) School-lunch programs

B. All counties and towns in the vicinity of defense areas, many of which might be reception areas for children in emergency situation

(1) Secure information on
(a) Births and child population by major age groups
(b) Availability of milk and other protective foods; use of surplus commodities
(c) Health, welfare, educational, and recreational facilities.

(2) Make a survey of child health facilities and services covering adequacy of service provided (amount, scope, and quality) in proportion to number of children to be served:
(a) Child health conferences
(b) School medical services
(c) Public health nursing services (including visiting nurse and school nurse services)
(d) Medical care for children (including pediatric service) provided by
Hospitals and outpatient clinics
Private practice
(e) School-lunch programs

II. That each regional council of the Academy establish lists of

1. Pediatricians willing to enlist with the appropriate governmental or private agencies to serve children in case of emergency in any designated area
2. Pediatricians who would volunteer to take a short course in the organization of maternal and child health programs to equip themselves to participate more effectively in an emergency program, should it arise.

III. That the executive board of the Academy

1. Discuss further with the proper authorities in the army and navy and selective service system the hazards to children in the withdrawal of pediatricians from service to the civilian population, and attempt to limit future withdrawal to those pediatricians who are essential for the care of patients with communicable disease in army or navy hospitals.
2. Take steps to assure pediatricians that their primary responsibility is to the civilian child population and to influence public opinion in support of this.

NUTRITION AND WAR

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THIS is a grave hour in our nation's history. The American way of life has changed during past months. Matters which once seemed of great moment have sunk into the background of our thought and action. The national will is bent on survival in a world close to chaos. Regardless of lines of political demarcation, or differences of opinion as to immediate next steps, there are few who doubt that everything must be subordinated to our struggle for survival as a free people.

As doctors, we are concerned with what we can do to make America strong by making Americans stronger. We know that if it is stupid to waste money and materials at this juncture, it is treasonable to waste man power. And I need not tell a group like this that the strength of our man power rests on a much broader base than that of medical care alone for the men in the armed forces and the workers in key defense industries. There will be little more business as usual until the impending threat to our national security and our personal freedom has been destroyed. There must be a much greater total production than we have now if we are to make good on the policies to which this nation is committed.

As we begin to gear up for this historic task, we see vast reallocations of population; new concentrations of industry. Families have been separated. Other families by the hundred thousand have migrated into areas without facilities for fundamental sanitary or public health control, much less for good medical care. The concern of good doctors is to see that these needs are met. For without the conservation of family health—more than that, without the improvement in the health status of our whole population, a need is demonstrated forcibly by the selective service examinations—we may not have the stamina to endure or the courage to conquer the ordeals ahead of us.

It is fair to say that pediatricians always have been at the head of the profession in the research and application of preventive medicine. They know that the whole structure of our American way of life is built upon the home and family health. They know that the cornerstone of family morale is the well-being and health of the child.

I have been asked to talk on the subject of better nutrition for a nation in the shadow of war. That has a two-fold implication: First, the problem arising from lack of food. Unfortunately, we still have in every slum, urban and rural, much undernourishment as well as malnourishment, resulting in acute disease. Children suffer the long consequences.

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*Surgeon General, U. S. Public Health Service.

Address at meeting of American Academy of Pediatrics, Boston, Mass., October 9, 1941.

The second, and perhaps potentially the most significant problem from the point of view of national fitness, is the chronic malnourishment found by our most careful medical observers among people in every walk of life: the lack of kind and quality of foods which make for hidden hungers, lessened vigor of mind and body, a low level of resistance to disease, a shattered capacity for carrying one's own load. This was true of many among our young men rejected by the draft.

If we can solve these two problems we shall have the power to build here in America, granted the will to do it, a nation of people more fit, more vigorous, more competent; a nation with better morale, a more united purpose, more toughness of body and greater strength of mind than the world has ever seen.

This is not a counsel of perfection. It is a total result to be accomplished only by putting to work all of the scientific knowledge we have for the nutrition of all our people. We have the capacity for agricultural production. We have the soil fertility, thanks to our conservation programs in recent years. We have the educational machinery. We have the food manufacturing and distribution facilities, with leaders keenly aware of their social responsibility. Throughout the nation we have a great surge of desire to do something solid for defense. Each of us wants to build better and more strongly the human bulwarks of democracy, which is the one thing we defend. These great assets in food production, distribution, education, social awareness, and patriotism can be canalized through science toward the goal of better nutrition which will lift our level of achievement.

In the past two decades there have been breath-taking discoveries on many nutritional fronts. To find a parallel to this swift advance in knowledge, we must go back to the epoch-making time of Pasteur, whose germ theory of disease made possible a half century of progress against preventable infections. Without Pasteur and his co-workers and disciples, mankind still would be plague-ridden. He made today's civilization vastly different. Tomorrow's civilization can be made vastly different and far better than today's if we put to work now what we know about the nutrition of human beings.

In the past half century we have added twenty years to the average span of human life, largely by what you pediatricians have done to save the lives of babies and of young people. But life expectancy for those of us beyond the age of 40 years has not increased since Pasteur's time. On the contrary, many diseases have increased because more of us grow old enough to acquire them. There are more deaths from cancer, heart conditions, kidney diseases, mental illness; in fact, from all of the so-called degenerative causes. It is too easy to charge this to the strain of modern life. Yet every disease, every malfunction of an organ, results from a derangement in the functioning of the individual body cell. The individual cell functions properly if it is properly fed, and

if it is not killed by the invasion of bacterial, virus, or chemical poisons, or by endogenous toxins. The food available to each of the body cells probably determines to a large degree the health of that cell, its proper functioning, its reciprocal relations with other cells, which make up organs and systems of the body.

A machine wears out prematurely if not properly fueled and lubricated. It is a reasonable hypothesis that the human machine wears out prematurely if it is not properly nourished. Certain it is that normal human nutrition requires a total of at least forty different food substances, carbohydrates, fats, minerals, proteins (in the form of amino acids), and vitamins, of which many have been isolated and reproduced as synthetic crystals. Not only does the body require these diverse food elements, but we know that these elements are required by the body in a certain definite ratio of one to the other. Infectious disease, treatment with certain drugs, and perhaps other causes as yet undiscovered, upset the normal body demand and ability to use particular food elements.

The science of nutrition is about as young as the science of aviation. We are far from knowing all the answers in either field. But as much, relatively, is known about what nourishes a human body as is known about what gets a heavy machine up in the air and to its destination safely. The difference is that far less of the nutritional knowledge is put to work.

Last May the President called a National Nutrition Conference in Washington to analyze the basic facts and to make recommendations to stimulate national thinking on this subject. Some of you were there. Blueprints were drawn for national action. For it is clear that while malnutrition is an individual and family problem to which the good doctor can make the greatest single contribution, it is also a community and national problem.

For the first time, scientific experts have written precise specifications for a diet which is adequate for good health, a "gold standard for nutrition." It represents no narrow list of foods, but a wide choice that can be purchased cheaply anywhere in the country, providing for men, women, and children the food essential for life and buoyant health. These blueprints will have meaning only if each one of the 130 million of us can and will translate the specifications into a wiser selection of what goes into our stomachs every day.

It may seem strange that we have not yet determined the full nature and extent of our nutritional problem. The evidence shows that only a small proportion of the undernourished have acute symptoms of disease; perhaps only one in ten. Like an iceberg, nine-tenths of our malnutrition, and the most dangerous part, is under the surface. Yet experimental and clinical evidence piles up ahead of exact laboratory tests to show that much ill health, mental and physical, can be relieved dramatically by the right food. Of even more importance is the evidence that

by the supplementary feeding of groups who were getting a diet to start with which once would have been considered adequate, growth, strength, resistance to disease and, above all, morale were swiftly promoted.

Sherman says that if we replace an average diet with an adequate diet, we get a 10 per cent increase in the active, virile life span. This would mean more in human terms than to wipe out cancer as a cause of death. In addition, through nutritional science we can eliminate much of the "half health, half strength, half happiness" which results from a diet not quite good enough.

Even though we do not know the full extent of the nutritional problem in the United States, every survey of nutrition, by whatever method conducted in whatever part of the country, shows malnutrition to be widespread and serious. Some people cannot afford to buy the food they need; others spend their limited food budget unwisely; still others have fixed and faulty food habits.

We Americans want good health to be the heritage of all, on as democratic a basis as the suffrage itself. We want no property qualification for health.

We happen to have plenty of land fertile enough to supply our present population and any prospective increase with every element of a full and adequate diet. This is true, in spite of past exploitation of agricultural resources. During the last war, we tried to raise wheat on land fit only for grazing. It will require a generation of careful restoration to eliminate the dust bowls created thereby. From the richest valley in the world, the Mississippi, we have exported the soil in the form of cotton, creating an economy of poverty, of tenancy, of pellagra, of anemia, and of hookworm. The rest of the country must help to restore it and the job will take many years.

We have been unwise on other fronts. Nature puts into the foods we eat the vital elements necessary for balanced health. Many of them have been depleted through our zeal for overrefining and by modern cooking methods.

One-half of our fuel, our calories, is in the form of bread and sugar. Add to this the refined fats, and two-thirds of our energy intake is in the form of "inert calories," which furnish fuel and nothing else. From the remaining third of our diet we must get the vitamin B complex and the minerals needed to burn up the inert calories. This has been hard to do during the past years. Bread, during long centuries, has been the "staff of life." Until recently we have made it a very frail and feeble reed by "scalping" out of the wheat berry most of the vitamins and minerals which the good Lord put into it for our protection. Year by year, too, our consumption of sugar has increased. White sugar is a source of fuel—nothing else. It does not carry the vital elements necessary for its use in the body.

To restore bread to its traditional virtue which made it the staff of life, the millers and bakers of the country in the new "enriched flour" have given us a stronger staff. It is attained either by conserving the vital elements naturally present in wheat through longer extraction, which means using more of the wheat berry, or, for that part of the public which continues to demand pallid bread, the most essential elements are restored to highly milled white flour without changing its color. Whichever is chosen, we get a more healthful food.

Modern diets are deficient, too, in other respects. To give to all what all of us need nutritionally, we should increase by nearly 50 per cent our national production of milk and milk products. One of the most valuable foods, dried skim milk, now is used largely for poultry and stock feed. In fact, we have given our livestock the best parts of many foods. We must give our children more of their share.

During the past decade, the United States has produced what we have called a "surplus" of agricultural products. Very wisely there has been built up an "ever normal granary" of corn and wheat to fend against emergencies cutting down supply or increasing consumption. Some of the most hungry of our needy families have been able to get a better diet through the "Food Stamp Plan." It has helped them, and it has made good use of some of our surplus foods. About half of our needy school children get at least one good meal a day for five days a week in the free school lunches.

Actually, however, these important programs have been designed to take surplus foods off the market, not primarily to meet nutritional needs. For if full domestic food needs are met, there is no real surplus of agricultural production except of wheat and cotton and tobacco.

If we add the desperate needs of Great Britain to our own requirements, we are faced with a shortage of animal proteins, of milk and milk products, and of the legumes. To meet this shortage now and to take our proper place in the half-starved world after the war, we must give direction to our farm output. When both ourselves and the British need the concentrated protein foods which we can produce, we cannot afford now to use as many acres as before in growing cotton, wheat, and tobacco, for which there is no market now or in prospect immediately after the war. We can take care of all of our own needs and the urgent food needs of the British too, but not on the basis of agricultural "business as usual." "Food will win the war" was the slogan in 1917 and 1918. Food lost that war for Germany. We must make extraordinary efforts to see to it now that the tables are not turned.

Food is a strategic material. Like other materials we should use what we have in the ways best calculated to win this war. We must expand our protein production at a rate and on a scale comparable to the production of other war materials. In specific terms we need for Anglo-

American nutrition every pound of milk and of cheese, every egg, every pound of meat and fish we can produce.

There is a narrow margin between the present British food ration and widespread malnutrition there. In the interest of their strength and our own safety the British food position must not be allowed to become worse. We dare not permit the diet of the British workers to be less than now. Only from America can they get the concentrated protein foods they must have now. We must provide it both by conservation of what we have and by expanded production.

Until our farmers can build the extra protein production plant needed, we may be obliged to share more generously our supplies of concentrated proteins. To put it bluntly, until our production can be stepped up, we may have to choose between letting the British people grow more hungry, and consequently, less able to resist, or rationing our own use of some critically important foods. Otherwise there may be a skyrocketing of prices and a hoarding of such foods that will deprive the neediest of our own people of what they, too, must have for health and strength.

Without depriving ourselves of anything essential for health, we could furnish some urgently needed food to Britain if we diverted to their use the dried milk now going into animal feed and into ice cream. Excellent substitutes are available for animal feeding. Those of us who consume the most ice cream are not the most nutritionally needy. We could spare the dried eggs now used in commercial baking of cakes and pastry. For all kinds of canned meats and fish, which can be shipped unrefrigerated and can be stored on the other side, we could substitute other fresh proteins. Evaporated milk, and above all, cheese, are high on the list of British needs. Should we not share them as we are sharing the bombers?

Not only is food a strategic material for us in our efforts to win the war, it is the sharp weapon of the Axis powers. At this moment most of the inhabitants of Europe are suffering from the two kinds of hunger which constitute this problem: what has been called the "hollow hunger" of starvation, of insufficient calories, and also the "hidden hunger," the metabolic starvation from lack of vitamins, minerals, and high-grade proteins. Whoever wins this war, hunger will be the central factor of the world situation.

In the event of an Axis victory, the conquered nations face the certainty of metabolic starvation which is the most potent of all means to control a population. It is an inexpensive, automatic Gestapo. The Germans know well the scientific data showing the close correlation of nutrition with the qualities of courage, stamina, and morale, as well as physical fitness. In Europe these principles are being applied in reverse. They will be applied, up to the hilt, to establish and maintain the great Nazi dichotomy, the new order of slave caste and master race.

Against this totalitarian concept, the free peoples, we hope, will oppose an equalitarian food concept. Having won this war, they must not lose the peace. They will be faced with populations driven half mad by suffering and starvation. A healing hand must be laid upon them and it must be a strong hand. The free peoples must begin now to organize with determined purpose, so that after the war is won the essential nutrients of the world will go as plentifully to all, as the resources of the earth permit. Poor food, always and everywhere, means a poor life. Good food, always and everywhere, is the physical warp into which may be woven the woof of a better life.

Aside from the humanitarian values and ethical possibilities of an international nutrition policy, we would have a great stake in it. It would certainly insure that agricultural production, in North and South America, and in the British Commonwealth of Nations, would be used to capacity. Here is one plant that need never stand idle.

It may seem a far cry from the problem of the starch-fed child with American beriberi—pallid, listless, dull at his lessons—to the problems of national and international economy which will be ours to deal with after the war. Actually, the malnourished child, as a symbol of our immediate task, is closely integrated with the ultimate issue. Relatively, for all its complex aspects, better nutrition is so small a part of the tremendous ordeal ahead. Yet if we fail to do it well, if we have not the intelligence and the courage on this single front to apply the science of nutrition to the needs of our people here and now, what hope can there be of our capacity to make the all-out effort on all fronts we must make to win the war, and even more to build a just and lasting peace?

But let not the hopes of the future obscure the immediate task. Today we are preparing not so much to defend the square miles of land that represent the forty-eight states, our territories, and possessions, nor an island here, or the bulge of a continent there; our labor is to defend the men, women, and particularly the children who are the United States. Science has shown us clearly how we can put our food knowledge to work to build a new, a stronger, a more intelligent, a more competent race. We must establish the human priorities to do this, here and now.

To accomplish the task, the voice of the physician must speak firmly in the national councils. His interest and influence and guidance will make the difference between success and failure in the application of science to individual and community nutrition needs. And from the record of your past capacity to cooperate with government agencies working for your own objectives, from the contributions you already have made to the public health through the prevention of disease and death among our children, the people of America look forward with confidence to your leadership now.

Original Communications

PEDIATRICS AND THE CLINICAL PROTECTION OF CHILD DEVELOPMENT

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WHAT is pediatrics? It is, as Osler so aptly said, the specialty of general medicine. Pediatrics aims to perpetuate the integrated comprehensiveness of general medicine, and it delimits its province by concentrating on a section of the life cycle rather than on a special organ system. The successful resistance of pediatrics to current trends of overspecialization has important theoretical and practical consequences. It accounts for a certain conservatism toward new movements in the field of mental hygiene, child guidance, and child psychiatry. But it also favors a progressive alignment with the advancing syntheses of psychosomatic medicine.

I. PEDIATRICS AND PSYCHOSOMATIC MEDICINE

Pediatrics, as a profession, prefers to assimilate those principles and procedures which preserve an integrated approach to the total welfare of the whole child. This conservative orientation is a salutary safeguard against overhasty adoption of novel theories and techniques. It places a premium upon those forms of approach which can be organically incorporated into the methods of general medicine, which is fundamentally psychosomatic medicine with a monistic outlook upon all symptomatology.

Historically, pediatrics was at first concerned entirely with the symptoms of disease. But the very nature and needs of infancy necessitated a widening interest in physical growth and the origin of defects and deviations. The supervision of nutrition in healthy as well as sick babies has greatly expanded the responsibilities of the physician. No branch of medicine is more deliberately directed toward prevention and positive health measures. Development as well as disease now falls within the province of pediatrics.

In all deviations and abnormalities of development the family physician or the pediatrician is most likely to play a critical role, for he is the first to be consulted. He has the opportunity to make the diagnosis early, to bring about the most timely prevention, and to furnish responsible guidance. He is in a position of extraordinary natural strength, as

Crothers points out, if he chooses to include in his conception of pediatrics an intelligent interest in problems of development and mental hygiene.

We need simply to enumerate some of the conditions which first come under the eye of the pediatric physician to appreciate the enormous importance of mental factors. The vast majority of all defects and deviations of development date from birth or early infancy and can be diagnosed in the first year of life. This is true of simple primary amentia, of aplasias, malformations, and primary degenerations of the nervous system; it is true of defects and deficits secondary to destructive lesions occurring in the fetal and circumnatal periods or even later. To this list must be added prematurity, endocrine disorders, sensory handicaps, motor handicaps, and the symptomatic retardations and deformations due to abnormal experience, environmental deprivation, and personality defects and disorders.

None of these diversified deviations and deficits of development is without mental health aspects. All of them demand a recognition of behavior factors both in the patient and in the parent. Herein lies the strategic role of pediatrics as the basic profession responsible for the clinical protection of child development.

The Clinical Significance of Behavior.—Behavior is the most subtle, sensitive, and inclusive indicator of physiologic condition and of developmental maturity. The pediatrician is interested in behavior as a psychobiologic manifestation of the status of a growing organism. As a clinician, he is concerned in behavior as symptomatology.

The developmental consequences of defect, disease, injury, and environmental handicap can be identified adequately only in terms of behavior. Indeed, behavior is the master key in the diagnosis and interpretation of developmental status, whether normal, atypical, or abnormal. A man may be as old as his arteries; an infant is as old as his behavior. The infant's behavior is the consummate index of the ripeness and organization of his nervous system. The pediatrician must adjudge the infant's maturity on the basis of behavior characteristics. He also uses somatic and physiologic criteria; but he can never neglect behavioral criteria. In the end his clinical appraisal must take norms of behavior into account. Developmental diagnosis is essentially behavior diagnosis.

The supervision and guidance of child development likewise depend upon an orderly regard for the behavioral indices of maturity. Periodic medical examinations are made to discover physical defects and liabilities. The protection of the physical health of the child readily becomes the stage for a broader type of supervision which includes the behavioral as well as the bodily economy of the child's growth. Not only feeding formulas but also feeding behaviors fall within the scope of developmental pediatrics. Sleep, rest, clothing, exercise, play, weaning, bladder

control, bowel control, habits of self-care, and a whole host of behavior problems, from thumb-sucking and head-banging to tantrums and phobias, may come within the sphere of the pediatrician before the child reaches school age. As a pediatrician he will be concerned mainly with the symptomatic significance of such behavior manifestations. He will interpret them to sharpen his appraisal of the child's developmental well-being. He will be interested in behavior patterns as indicators of the healthfulness of the family situation, including the parent-child relationships.

Accurate diagnosis remains his central and controlling objective, even when he is dealing with so-called behavior problems. There is a temptation, despite the natural conservatism of the profession, to embark upon mental hygiene measures and guidance procedures which are not firmly based on diagnosis. Successful guidance of parent and child demands psychologic insight; but psychologic insight is largely a matter of accurate diagnosis in the first place.

Such diagnosis demands an integrated approach to the total welfare of the child. The Committee on Mental Hygiene of the American Academy of Pediatrics recognized the significance of this type of psychosomatic medicine in the following recommendation:

"Because of the integral relationship between physical and mental growth and the physiological influence of one upon the other, a consideration of mental health is an important part of every pediatric teaching program. This becomes more important when one realizes the importance of the first two years of life, which period is almost entirely under the care of a pediatrician or general practitioner of medicine. . . ."

II. DEVELOPMENTAL DIAGNOSIS

From the foregoing introduction it is clear that a clinical pediatrics which aims to protect the developmental welfare of infants and children must reckon with behavior patterns. Developmental diagnosis is primarily an appraisal of the functional maturity of the nervous system by the aid of behavior norms. Such an appraisal answers the fundamental questions upon which guidance and therapy are based. Is the child normal? How does he deviate from the normal? What is the cause of the deviation?

Amentia.—In all cases of abnormal development one must first inquire whether the behavior retardations and deformations are deep-seated or transient, generalized or delimited, ameliorable or irreducible. In a word, amentia must be recognized or ruled out. Only occasionally can this be done on the basis of physical stigmas alone. Differential diagnosis demands the assessment of developmental status in terms of behavior and in terms of age. In infancy small degrees of discrepancy may have serious prognostic import, because early retardation, like a shadow, lengthens as the child grows older. A lag of a month at the age of three

months may become a lag of a year at the age of three years and a lag of two years at the age of 6 years. Amentia is not outgrown or "made up" in later years; it becomes more obvious. There develops a greater discrepancy between the abilities of the child and the demands of his environment until the amentia becomes a community problem as well as a family problem.

In the absence of serious sensory, motor, or environmental handicaps, persistent retardation is usually of serious prognostic import. One must be very sure, however, before making a diagnosis of amentia; other conditions often simulate it. Almost no other condition produces greater parental unhappiness and suffering.

Cerebral Injury.—Cerebral injuries may occur before, during, or after birth and are caused by trauma, hemorrhage, infections, toxins, and anoxemia. They produce destructive lesions which may be devastating or circumscribed, mild, diffuse, or selective. They may produce motor disabilities of all grades of severity from generalized spasticity or marked athetosis to very slight manual incoordinations or a mild tendency to stutter. Mentality is usually affected to a greater or lesser extent; but the fact remains that in most cases the neurologic damage is selective and leaves important developmental potentialities unimpaired.

These conditions can be recognized early, and it must be said that the pediatrician cannot make a satisfactory neurologic examination in infancy without the application of behavior tests. A behavior examination discloses characteristic reactions and specific retardations and deviations which are so distinctive that they point to faults in neural structure and to impairments in neuromotor functioning. Repeated careful appraisals are needed to determine the child's educability and the probable success of treatment measures. The critical interpretation of psychomotor behavior in the presence of motor disabilities is difficult, exacting, and all-important.

Sensory Handicaps.—To the pediatrician generally falls the task of discovering the presence of visual and auditory defects. The diagnosis of marked visual defect, strabismus, etc., is relatively simple in infancy, but the early detection of deafness is not so simple. In a surprisingly large number of instances, deafness escapes diagnosis for months or even years. Response to noises is mistakenly regarded as ruling out deafness when the child is actually perceptively deaf to the speaking voice. Inasmuch as formal acuity tests for hearing cannot be applied in infancy and have a very limited scope in early childhood, the physician must give special attention to the numerous behavior signs which are suggestive of a serious hearing defect. Among the signs are reduced and monotonal vocalizations, disproportionate attention to things rather than persons, and subnormal rapport in nursery games; tensions and tantrums due to lack of comprehension develop later.

Again it is the behavior symptoms which are crucial. And again behavior is clinically significant because it supplies the key for interpreting the status and outlook of the child's development. Sensory handicaps not only retard the normal course of mental growth but also alter the organization of intellectual and personality structure. The physician must be aware of the nature of these effects if he is to give intelligent guidance and advice. It is not enough merely to advise a school for the deaf or blind, or a sight-saving class at school age. Long before these measures are even practical, much less advisable, the parents need concrete directions as to home care; the meaning of the handicap and its relation to behavior development must be continually interpreted to them.

Environmental Deviations.—The constant task of the pediatrician is to appraise the working capital of the growing child. As a physician he is primarily interested in the child's constitutional equipment which is determined mainly by intrinsic factors. The environment, including persons and experiences, plays a vital part, however, in the socialization and acculturation which every child undergoes in the process of growing up. Abnormal home conditions or prolonged institutionalization produces faulty or retarded socialization. This affects the development of what we call personal-social behavior, of language behavior, and even of adaptive behavior.

The clinical picture finally shows such significant degrees of retardation and deviation that it is difficult to make a differential diagnosis from true amentia. Here the therapeutic test of an enriched and improved environment is invaluable. Clinical experience with institutional children will make the pediatrician alert to those peculiarities of behavior which constitute the environmental syndrome.

Child Adoption.—The physician has certain professional responsibilities in protecting the standards and procedures of child adoption. Both for parents and for child, infancy is the most favorable time for adoption. But the hazards are great if the whole process of adoption is not safeguarded carefully at every step. Many infants offered for adoption are of inferior family stock, many have institutional backgrounds; their essential and innate normality definitely must be established before adoption can be recommended. There can be no guarantee that the good environment of an adoptive home will compensate for poor endowment.

Careful developmental diagnosis and a probationary period of at least a year in the adoptive home prior to consummation of adoption are essential safeguards against unfortunate placements which can cause only unhappiness. The pediatrician is in an excellent position to reduce the risks of adoption. He should educate the parents to see the wisdom of dealing with responsible, accredited social agencies, of evaluating the

family background of the child, of demanding an appraisal of the child's potentialities, and of considering all these factors in terms of the requirements and desires of the adoptive parents.

III. DEVELOPMENTAL SUPERVISION

In the clinical protection of child development, diagnosis always involves prognosis, and prognosis involves guidance. The three are interdependent. And since development is a continuing process, physician and parents must enter into a kind of partnership to keep pace with behavior changes as they occur. Developmental guidance depends upon an intelligent interpretation of the behavior characteristics of infant and child in terms of growth, maturity, and social environment. Behavior symptomatology figures at every turn.

Periodic health examinations make possible a type of developmental supervision which has a hygienic regard for behavior traits and behavior maturity. The importance of psychologic factors in the development of personal-social behavior and in the adjustments of the preschool child to "habit training" should not be underestimated.

The supervision of infant feeding is one of the major responsibilities of pediatrics. For the modern infant the whole problem of feeding has assumed new difficulties due to cultural reasons which are psychologic at bottom. The problem is not only dietary; it is also behavioral. Although the development of feeding abilities follows a general ontogenetic sequence, there are significant individual variations. Those which relate to the rhythms of appetite are particularly important because they are rooted in the emotional life—the strivings, satisfactions, and sense of security of the infant. When the rhythms are studied over a period of time, the infant on a self-demanded schedule exhibits a capacity for self-regulation which casts doubt on the wisdom of imposed ironclad feeding schedules.

Sphincter control, like feeding (and sleep), involves both the autonomic nervous system and the cerebral cortex. The acquisition of bladder and bowel control under modern cultural conditions is overcharged with psychologic hazards. It is the task of the pediatrician to reduce the hazards by counsel and guidance. He will disapprove overstrenuous training and disciplinary measures which are inconsistent with maturity factors. Again it is evident that the pediatrician must have a weather eye for the ubiquitous factor of behavioral development.

Even if he would, the pediatrician could not limit his practice to purely "physical" conditions. He is bound to be confronted with all sorts of minor behavior problems which are more or less characteristic of the development of the preschool child. The problems relate to sleeping behavior, play activities, fears, destructiveness, masturbation, obedience, night terrors, etc. Some of the problems are relatively benign. Very few of them can be referred to a specialist. Although the pedia-

trician cannot qualify as an expert in all of these manifold directions, he cannot escape the problems and the opportunities for advisory guidance. Fortunately an elementary knowledge of the developmental determinations of personality will put him in a position to use his authority constructively.

The success of child care does not depend so much upon rule-of-thumb techniques as upon the underlying attitudes of parents and attendants. Here lies a fertile field for pediatric guidance. In many respects the parent-child relationship is the most accessible and amenable factor in effecting a mental hygiene of infancy. In almost a literal sense, the physician can reach the mind of the infant and child by altering undesirable attitudes in the parent. Through his authority and by tactful suggestion he can moderate emotional tensions and reduce overanxiety. He can liberalize the parents' philosophic outlook. For this he needs a clinical kind of developmental insight. He does not step out of his role when he consciously addresses himself to the adult-infant relationship as a dynamic reality which yields to advisory control.

SUMMARY

This brief survey of the practical applications of developmental diagnosis is sufficient to indicate the strategic position of pediatrics in the scheme of medicine. There is growing demand for a periodic type of developmental supervision which will require a more systematic diagnosis of behavior symptoms in the clinical protection of early child development.

PYKNOLEPSY

A Study of Diagnosis and Prognosis

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INTRODUCTION

IN A RECENT paper* we reported a study of eight children with pyknolepsy. As a result of clinical and electroencephalographic observations we concluded that pyknolepsy was a form of petit mal epilepsy although differing from the usual picture in the absence of deterioration and its tendency to spontaneous recovery. The physician is interested therefore in knowing exactly what the characteristics of this subgroup are in order to be aided (a) in making a definite diagnosis and (b) in determining which cases will spontaneously recover and which are likely to continue in a chronic form.

Observers generally have considered pyknolepsy to have the following general characteristics: The appearance in otherwise healthy children of very frequent, short, incomplete cloudings of consciousness, running a fairly monotonous course with little response to therapy, no deterioration, and generally a favorable prognosis. These characteristics, especially the lack of deterioration after years of daily attacks numbering sometimes as high as 150 a day, have made it stand out from ordinary petit mal epilepsy and have led some to believe that it constitutes a disease entity, although others have considered it a form of epilepsy, hysteria, or spasmophilia. One of our typical cases is given as an example:

CASE REPORT

A. B., a Jewish boy of 13 years of age, was the second child in a family of three. The older sister had suffered from Sydenham's chorea and a half sister had had a psychosis for many years. There was no epilepsy or migraine in the family. The mother had attempted abortion with drugs when she was about three months' pregnant with the patient. This had caused a few cramps but no bleeding. His birth was normal, with easy delivery, no anesthesia or trauma. His birth weight was 8 pounds. The early development was normal. The patient refused the breast at 6 six weeks of age and was weaned satisfactorily at this time. At the age of 3 years he had grippe which was mild and lasted two weeks; there was no history of any neurologic signs. A slight tendency to stutter was noticed after this disease and this speech defect has continued to the present time. At about 5½ years of age there were attacks of chicken pox, measles, and whooping cough, separated by a few months. All were mild except whooping cough which was fairly severe with cyanosis and vomiting during the paroxysms but no evidence of hemorrhage.

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*To be published.

Onset of Attacks.—At the age of 6½ years without apparent cause there was an abrupt onset of attacks in which the patient would usually stop whatever he was doing, stare, flutter his eyelids, roll his eyeballs upward, and sway slightly backward and forward, at times taking a step or two backward. These attacks occurred about fifty times a day, lasting two to three seconds, and there was complete amnesia for this period, though the patient knew that he had just had an attack. At times certain activities were continued automatically; for example, if he were riding a bicycle or was swimming he would proceed without accident. Usually speech was halted, though at times he would utter a few unintelligible sounds, but he would always resume wherever he had left off immediately after the attack had ceased. He did not drop any objects he might be holding. Occasionally there was a peculiar smile on his face during the attack. Pupils were unaltered and there was no change in color or pulse.

The character of the attacks remained the same throughout the illness except that the frequency gradually increased over the first three years to about 150 a day. They remained at this level until the age of 10 years when there was a gradual decrease over a period of three weeks and cessation without any apparent cause.

Factors Influencing the Attacks.—The parents believed that the attacks were increased by fatigue and hot weather. The patient once suggested that the attacks would be relieved if he were given permission to help his parents by conducting a newspaper route. For two weeks after the beginning of this occupation he was entirely free from the attacks; then they returned in full force although the activity continued. But for this one two-week period of freedom there were constant daily attacks during the 3½ years of this illness. Intercurrent fevers brought about no change in frequency. Luminal was not effective. Ephedrine sulfate, ⅜ gr. three times a day, decreased the number of attacks slightly for a few weeks, but they returned in full force and were not affected further by medication.

Physical Findings.—The general physical examination was negative except for a soft systolic murmur at the apex, functional in nature. The neurologic examination also was negative. His I. Q. at 7 was 112; at 13, 125.

From the 299 cases* described in the literature, we have selected, as far as we are able to ascertain, all the cases described as pyknolepsy that have ceased spontaneously and have been observed symptom-free for two or more years. Though spontaneous recovery in pyknolepsy does not invariably take place, as will be shown later, this group of the 42 recovered cases† would seem to be a suitable nucleus for statistical study.

DISCUSSION OF INDIVIDUAL CHARACTERISTICS OUTLINED IN TABLES

Onset and Course.—Onset (Table I) occurred between the ages of 2 and 13 years with a majority of cases beginning between the ages of 3 and 10. Onset is usually abrupt but it was gradual in eleven cases,

*A great many of these cases may not be true pyknolepsy. Rosenthal deducted 86 cases from his total of 252 as not being typical of this condition, described poorly, or observed for too short a time. Our figure is made up of Rosenthal's 252 plus those described since that time. The fact that there are only 42 cases observed recovered for over two years out of this total of 299 might be misleading as to the eventual outcome of this disease. The reason our statistical number is so small would seem to us to be that most of these cases were observed for only a short period, insufficient to determine their ultimate outcome.

†The cases selected were: Stier, Cases 1 to 7; Pohlisch, Cases 1 to 8 and 11; Friedmann, Cases 7 and 9 (1906 paper); Rosenthal, Cases 1 to 10; Engelhard, Cases 1 and 8; Abramson, Case 2; Husler, Cases 8 and 9; Kochmann, Case 1; Remé, Case F. A.; Lindenblatt, Cases 1 and 2; Zappert, Case 10; Marchand and Bauer, Case 1; and our own, Cases 1, 2, and 3.

or 27 per cent. Some authors have attempted to give precipitating factors of the first attacks. Five list various frights and two state that pyknoleptic attacks came on immediately after cessation of grand mal seizures.

TABLES SHOW STATISTICAL STUDY OF
FORTY-TWO CASES OF PYKNOLEPSY THAT HAVE CEASED FOR OVER TWO YEARS

Thirty-nine cases from literature; three of our own.
Sex: Twenty-two males; nineteen females; one not stated

TABLE I

COURSE OF ILLNESS

AGE (YR.)	ONSET (NUMBER OF CASES)	CESSATION (NUMBER OF CASES)
1	0	0
2	1	0
3	6	0
4	5	0
5	6	2
6	6	0
7	5	5
8	1	4
9	6	3
10	4	3
11	1	10
12	0	3
13	1	2
14	0	1
15	0	3
16	0	1
17	0	4
18	0	1

Average age onset, 6¼ years; average age cessation, 11 years.

Gradual onset noted, 11 cases; gradual cessation noted, 5 cases.

Abrupt onset noted, 7 cases; abrupt cessation noted, 12 cases.

TABLE II

COURSE OF ILLNESS

DURATION (YR.)	NUMBER OF CASES
½*	1
1	2
2	12
3	5
4	5
5	5
6	4
7	3
8	1
9	2
10	2

*Exact months not stated; assumed 6 months for averaging.

Average duration, 4¼ years.

Generally the period of greatest frequency of attacks is not described in detail in the literature, so that it is indefinite as to when this peak will be reached. In our own series, however, Case 1 reached its peak over a period of three years; and Case 2, in two and a half years.

Cessation.—Attacks ceased between 5 and 18 years of age, the greatest number at the age of 11, which would bear out the impression of many observers that these attacks tend to cease spontaneously at or shortly before puberty. It is to be noted that 11 years of age is about the time of onset of the secondary sexual characteristics, such as breast enlargement, pubic hair, etc. Cessation was gradual in five cases and abrupt in ten. These cases of gradual recovery have led some authors to believe that occasional skipping of a day after a period of years of monotony presages cessation. The factors listed as possibly precipitating cessation are quite varied, and we are inclined to believe that they are incidental. (Table I.)

Frequency.—Frequency of attacks extends from one up to 150 a day, but the usual number ranges between 10 and 50. It is characteristic

TABLE III

CIRCUMSTANCES GIVEN AS POSSIBLY PRECIPITATING ONSET
During street car accident; no details given
Two days after operation on nose
Began day after patient was frightened by dog jumping on him
"After" being frightened by cat jumping on patient
"Came on after" being frightened by shooting during New Year's celebration
Few hours after grand mal ceased (2 cases)

CIRCUMSTANCES GIVEN BY AUTHORS AS POSSIBLY PRECIPITATING CESSATION
"At start of menstruation attacks suddenly disappeared"
Bromide therapy
Bromide and luminal therapy
After fright from street car collision (previously increased by fright)
With whooping cough
"Possibly after nephritis"
Discharge to country (2 cases)
After three grand mal seizures
With change of climate
During communion
Suggestion: faradization and placed in the sun
After change to convalescent home
With onset of three-month period of grand mal attacks
Removal from irritable grandfather
Admission to hospital

CASES SHOWING ATTACK-FREE PERIODS (TEN CASES, OR 23 PER CENT)	NUMBER OF CASES
Occasionally a day	1
Ten days (suggestion)	1
Two weeks	1
One- to three-week intervals	2
Several weeks	1
Four weeks (with bromide)	1
Four months	1
Four months plus	1
Several months	1
Four months; three months; three months (three separate periods)	1
Ten months; seven months (two separate periods)	1

YEARS OBSERVED SYMPTOM-FREE	
NUMBER OF YEARS	NUMBER OF CASES
2	9
3	7
4	3
5	9
6	1
7	0
8	2
9	1
10	1
11	4
12	1
13	1
14	1
15	2

that the frequency is fairly steadily maintained and usually is affected little by outside circumstances. (Table IV.)

Symptom-Free Periods.—There were symptom-free periods in 23 per cent. They usually lasted from a week to several months and rarely recurred. When symptom-free periods are very frequent, especially when absent for many short periods of a day or two, it is generally conceded that grand mal may develop and the condition is not pyknolepsy. It seems characteristic then that there are either occasional full symptom-free intervals of a few weeks or months or else a fairly well-maintained daily frequency.

Duration.—Apparently few authors ever timed the attacks, and the figures given represent their estimates. Generally the duration noted is about twenty seconds. Only two were stated to last over one minute and in these cases this was an exception to their usual frequency. (Table IV.)

Motor Manifestations.—Various eye motions are usually observed, and Rosenthal considers them sufficiently frequent to be a characteristic symptom. Staring, blinking, and rotating of the eyes upward are the most frequent outward manifestations of an attack. Stepping was seen

TABLE IV

FREQUENCY AND DURATION

FREQUENCY	NUMBER OF CASES	DURATION OF ATTACKS	NUMBER OF CASES
2 to 3 a day	1	"A second"	1
1 to 5 a day	2	1 to 2 seconds	1
4 to 5 a day	2	2 to 3 seconds	1
2 to 6 a day	1	2 to 10 seconds	1
4 to 6 a day	1	10 seconds	1
6 to 7 a day	1	10 to 20 seconds	10 (All 10 Rosenthal's cases)
8 a day	1		
1 to 10 a day	1	"Up to 30" seconds	1
2 to 10 a day	1	10 to 40 seconds	1
3 to 10 a day	1	10 to 45 seconds	1
10 a day	1	"Instant"	2
5 to 12 a day	1	"Few seconds"	1
3 to 20 a day	1	"Momentary"	2
10 to 20 a day	1	"Several seconds"	2
12 to 20 a day	1	"Part of minute"	1
20 a day	1	"Less than minute"	1
20 to 30 a day	1		
30 a day	1	30 seconds to 1 minute	1
5 to 40 a day	1	"Judged 1 to 2 minutes"	1
20 to 40 a day	1	30 seconds to 2 minutes	1
30 to 40 a day	1	20 to 40 seconds; longest, 2 minutes	1
10 to 50 a day	10 (All 10 Rosenthal's cases)		
60 a day	1	"Very short"	2
50 to 100 a day	1	"Short"	3
20 to 150 a day	1		
		Not stated	6
"Several every hour"	1	Total	42
6 to 7 every hour	1		
"3 in several minutes"	1		
"Frequent"	1		
"Innumerable"	1		
Not stated	1		
Total	42		

in five cases. Other motor manifestations are listed in detail. It is seen that these show great variation and frequently gross symmetrical body motions. In two of our own cases the children seemed to go through a mild tonic phase with extension of the head, then a few short clonic jerks in much the same sequence as would be found in major epilepsy, with the exception that they were very mild and brief and were not accompanied by deep unconsciousness, and a fall, or other characteristic grand mal features. (Table V.)

Other Features.—Swaying, when it occurred, seemed always in the anterior-posterior direction. Falling was noted in only two cases and in these the fall was more of a slump, the patients being sufficiently able to control it so that they never injured themselves. Incontinence of urine was found in 7 cases but was noted to occur in these only on rare occasions. Incontinence of feces during an attack was not reported in any case. Fixed pupils were noted in 6. We believe that this

TABLE V

MOTOR MANIFESTATIONS

SYMPTOM	NUMBER OF CASES
Blinking	15
Eyes: Up	15
Lateral	2
Vary	2
Mumble	5
Smile	2
Takes steps	5
Others (described below)	13

FURTHER MOTOR MANIFESTATIONS IN DETAIL OF THIRTEEN CASES

Stier, Case 2	"Lowered her head, then immediately resumed original position . . . once noticed to drag legs, then stop . . . in some attacks she bends head toward the right somewhat, lowered her right arm"
Stier, Case 3	Arms stretched forward; fist; rhythmic trembling with half-bent forearms while the upper arms were pressed against the body; here and there, twitching of the angle of the mouth and of the eyes
Stier, Case 5	Several panting breaths, arms half-flexed and somewhat in tonus; one attack, slight tensing of the arms
Pohlisch, Case 1	Occasional grasp reflex; twice short body bending without convulsion
Pohlisch, Case 2	Frequent automatic movements of trunk and arms "like a doll"
Pohlisch, Case 6	Single clonic jerks; also in muscles of forehead; occasional inarticulate sound
Friedmann, Case 7	Aura; runs to mother; begins to grasp in the air
Rosenthal, Case 6	Twitches entire body
Rosenthal, Case 7	Hands clenched; body flexed; steps back
Rosenthal, Case 9	Jerks one leg; bends body together
Marchand and Bauer, Case 1	Disordered automatic motions
Our Case 1	Two or three jerky motions of the head and arms
Our Case 2	Slight twitching of the arms and head and mumbling; in attack arms lifted jerkily at sides and head jerkily extended; on rare occasions the mother felt she saw the child's hands jerking in sleep in manner similar to attacks

incidence may be small because of the great difficulty in testing the pupils in attacks of such short duration.

Electrical reactions of nerves were noted to be normal in 5, increased in 1, and there was a positive Chvostek in 2. Due to the fact that it has been shown that these reactions are frequent in otherwise well children, they would seem to be incidental.

Paling was found in only one case (Pohlisch, Case 5). Pohlisch's Case 4 was said to have "mild color changes of the face." Stier's Case 2 was said to "redden" always following the attack. This statement "*following* the attack" is a difficult one to interpret and this symptom might be due to other factors. From our investigation of the literature, cases which have presented flushing *during* an attack have usually proved to belong to grand mal epilepsy. The ashen gray color seen sometimes in grand mal also certainly does not go with this condition. It is felt then that even mild vasomotor changes are exceptional and that marked changes are foreign to the pyknolepsy syndrome.

Consciousness.—Consciousness was apparently only partially affected. These children were always able to take up immediately where they left off when the attack began, would even complete a sentence previously begun, and in every way seemed to retain all the facts occurring immediately before the attack. Automatic motions were frequently continued; and as has been noted, some patients continued to sing, speak (though words were unintelligible), ride a bicycle, swim, etc., throughout. All of them avoided danger and there has been no report of any who have suffered injury although one reported that a child was "almost" struck by a street car and another that the child was "almost" run over by a horse. Details were not given, and it is not known whether these patients observed danger at the last minute or were prevented from entering into it by other people. Certainly our own patients have satisfactorily avoided danger and apparently were even able to perform simple mentation in circumventing it. One child was able to cross the street and dodge traffic. Another could ride a bicycle, avoiding obstacles. One patient reported in the literature was able to proceed around an object. As a general rule, however, their avoiding danger is on a more simple plane in that they stop when they see it but are not able to initiate activity. Occasionally they will carry out simple commands during an attack. One of our patients was able on command to stop an attack and pick up a handkerchief; she then resumed her attack to completion.

Complete amnesia for the attack was recorded in fourteen cases. Two cases showed none. One of our patients was able to carry out an order afterwards that he received during the attack. Pohlisch's Case 7 responded, "Ouch," when he was pinched and remembered he had been pinched after the attack was over.

It is, of course, very difficult to determine the depth of loss of consciousness. It would seem that if consciousness were sufficiently affected so that the patient could not avoid dangerous situations and could not resume activity immediately where he left off the condition certainly does not belong to the pyknoleptic group.

Aura and Postattack Symptoms.—Aura was noted in only one case, Friedmann's Case 7, in which the patient was said to have been able to "feel the attack coming on," yelled for his mother, grabbed her, was uncertain on his feet but did not fall. Aura is certainly an exception and it is felt usually to denote grand mal epilepsy.

Night Attacks.—Night attacks were noted in four cases. Friedmann originally felt that night attacks were very frequent, which is hardly borne out by these figures. He felt that when they occurred the children were awakened at night by other factors, had attacks, and then resumed their sleep. Rosenthal felt that nocturnal attacks without awakening were a very bad sign and indicated major epilepsy. Only one of our own cases was noted to have attacks at night and this was entirely the

mother's observation. It is felt that this subject deserves further study and that no definite conclusions should be drawn at this time.

Major Seizures.—Major epileptic attacks occasionally occur preceding the onset of pyknolepsy, and occasionally there are a few short seizures at the termination of the pyknoleptic illness. One of Stier's patients, Case 2, had five grand mal seizures at the age of 3 months; then the child was well and pyknolepsy began at the age of 10 years. A patient of Kochmann's, Case 1, began following two grand mal attacks and there was no further evidence of major epilepsy. One of Marchand and Bauer's patients, Case 1, showed major epilepsy from the age of 18 months to 4 years; pyknolepsy began at 9 years and was present until 11 years, was followed by three months of grand mal epilepsy, and at last observation two years later patient was entirely well. A patient of ours had two years of frequent grand mal seizures, then a night of status epilepticus immediately followed by typical pyknolepsy. No further major attacks were ever present.

In none of these forty-two cases that have spontaneously recovered was there a grand mal seizure *during* the course of the pyknoleptic attacks.

Factors Influencing Attacks.—One of the characteristics of this symptom complex is that it shows little alteration by external factors. Data given by authors, that 2 were increased by fatigue, 1 by constipation, 1 by hot weather, and 1 by "seasonal rains" of the fall, are such infrequent observations that they would seem to be of little importance. Four cases were stated to be increased by excitement, 1 by anger, and 3 by fear. Suggestion temporarily stopped 2 cases, both our own (Cases 1 and 2). This temporary cessation was only of a few weeks' duration and fits in fairly well with occasional temporary relief thus accomplished in petit mal. Hypnosis was ineffectual in our Case 2, though at a later period suggestion helped temporarily. One of our patients believed her attacks were brought on by pleasurable excitement especially and gave as an illustration her joy at the news that she was at last going to the country. Friedmann notes this same relationship in his Case 7. The role of emotional hyperpnea under such circumstances is an interesting one to consider.

It generally has been conceded in literature that drugs were of no help in this condition. However, some slight changes have occasionally been seen. Referring to Table VI it will be seen that the effect of bromides is quite variable, rarely increasing or decreasing attacks temporarily. The question of drugs causing cessation would seem to be open to doubt, for this causative relationship appears in only two cases. In one of Stier's patients, Case 4, bromides were supposed to cause decrease and then cessation of attacks at the age of 10 years. As this recovery occurred at the age of 10 years, a frequent age for spontaneous cure, we question this relationship. One of Rosenthal's patients, Case 4, was

Table VI

Special Features

Manifestations noted	Present (number of cases)	Absence noted (number of cases)
Swaying	5	3
Falling	2	4
Incontinence	7	6
Dropping objects	3	7
Vasomotor (transient color changes)	3	11
Pupils: Fixed	6	4
Dilated	3	3
Aura	2	3
Postattack fatigue and drowsiness	1	
Night attacks	4	4
Consciousness:		
Amnesia	14	2
Able to avoid danger	4	2 (Questionable)
Continues preceding motions throughout attack	9	2
Interrupts attack on command	2	
Aware of having had an attack	6	1
Increased electrical reactions (nerves)	1	5
Chvostek's sign	1	3
Cases with major seizures during pyknoleptic illness	0	
Cases with major seizures during lifetime	5	

Factors influencing attacks	Increased attacks (number of cases)	Decreased attacks (number of cases)	Noted as unaffected (number of cases)
Activity		3	4
Fatigue	2		
Constipation	1		
Weather	2		
Time of day:			
A.M.	4		
P.M.	1		
Fear	3		1
Excitement	4		1
Anger	1		1
Menstruation	1 (ceased with onset of menstruation)		
Infection	1 (dated onset of improvement from period of fever; 2 noted as unchanged during intercurrent fever)		

Therapy	
Suggestion	1 stopped temporarily; 1 not affected
	1 stopped completely
Luminal	1 increased; 1 ceased 2 weeks; 18 not affected
Bromides	2 increased; 1 "short cessation" then increased frequency; 1 caused decrease later supposedly caused cessation; 24 not affected
Bromides and luminal	1 ceased entirely
Ketogenic diet	Not mentioned

Intelligence and school performance	
Intelligence	17 normal; 15 above normal; 2 below normal
School performance	7 normal; 7 above normal; 5 below normal

Family history of epilepsy
2 cases "fainting spells" (mother; mother and aunt) 4.8 per cent
6 cases definite epilepsy (aunt; sister; mother; father and uncle; "great deal of epilepsy in family"; uncle) 14.3 per cent

said to have stopped at 7 years of age after the use of bromides and luminal. Few details are given in this case, but attacks were said to have lasted two years which is the most frequent yearly duration in this series recovering spontaneously.

Luminal increased attacks in 1 patient (Pohlisch, Case 4) and in another apparently caused cessation for two weekly periods (Pohlisch, Case 7). It was noted to show no effect in 18 others.

Intelligence and School Performance.—Intelligence and school performance were generally superior. There were no figures given in these cases except in our own three regarding the I.Q., statements being made only that the patients were "normal," "superior," etc. As described in detail in another paper, our 3 patients showed quotients of 105, 111, and 100 after the cessation of attacks. During the attacks the I.Q.'s of two of these patients were slightly lower than after their cessation.

It would seem from the above that intelligence quotients either remain about the same or are later increased to some extent following the attacks. This later improvement may possibly be accounted for by previous personality problems as a result of the pyknoleptic attacks or by actual interference with cerebration due to threshold or subthreshold discharges.

Mental Characteristics.—Generally authors have not gone into any detail regarding the personalities of these children, but in 32 cases there have been some brief observations. A few were noted as being irritable, spoiled, passive, enuretic, stubborn, etc.; 2 were stutterers, 1 was described as effeminate, 1 brutal, and 1 homosexual.

In our own 3 patients certainly we have been struck with the fact that they have been subjected to a great deal of attention from their anxious families who have usually been oversolicitous and accompanied them wherever they went for fear an attack might prove dangerous. As a result they were usually spoiled, timid, and passive, and somewhat retarded in their social development. Generally speaking, it would seem that if the attacks in pyknolepsy were on a hysterical basis, there would certainly be a greater variation in their pattern and frequency and evidence of more definite relationship to difficult situations.

Past History and Physical Status.—Birth was recorded as normal in 9 patients. There were two 7-month babies, 1 forceps delivery, 1 face presentation, 1 hydrocephalus at birth; 1 was born with cord around the neck and had cyanosis for two days.

Development was noted as normal in 11 of the children. In 1 patient there was enuresis to the age of 10 years. One was noted to have been delicate and pale. One was late in walking and was stated to be small, weak, and a feeding problem. Otherwise there was no mention made of any developmental difficulties.

As regards their present health, 9 were recorded as being normal. There was 1 child each described as follows: many headaches and slug-

gish pupils; large skull circumference; mild left ptosis; hydrocephalus since birth; weakness left external rectus; absent frontal sinuses; stutterer and functional cardiac murmur; overweight and overheight; hearing difficulty and old ear infection; pale and delicate; pale and fragile with pin worms, and constipation; small and weak; hypersensitive skin; ichthyosis; alopecia areata; dermatographia.

DISCUSSION

In this study we are struck with the great variation of symptoms accompanying the basic pyknolepsy symptom complex. Most of the manifestations of petit and grand mal epilepsy are found here, the difference being that they occur transiently and in very mild form. When any of the symptoms of grand mal epilepsy are present they are exceptionally light and rarely repeated. Patients may even go through a very mild pattern of tonic and clonic phases but they will remain standing, or, if they fall, it is merely a slight slump without injury. The attacks in general are symmetrical, and they usually start with eye symptoms, blinking, staring, and rotation of the eyes. These factors together with the rarity of symptoms associated with primary foci in the cortex would make us think that the attacks probably arise from a subcortical region, then spread to the higher region in attenuated form.

It is interesting to note that these patients all ceased having attacks by the age of 18 years which is, in general, the termination of the growth period. Could this process of growth in some way relieve pressure in subcortical regions that might lead to such spontaneous cures? Previously many authors have felt that the sexual cycle played a very important part but this study does not show this relationship, for only one patient in this series ceased having attacks at the time of menstruation. In one of our own patients early puberty induced by drugs did not cause cessation of the attacks.

The question arises as to whether there is any justification to continue designating this subgrouping of the petit mal epilepsies as pyknolepsy. Due to the fact that these patients do not show deterioration, do not tend to develop grand mal epilepsy, and may recover, it would seem to us important that such a subgrouping be designated by a special name. Though the roots of the word pyknolepsy do not describe completely this division of epilepsy, characterized by frequency of attacks, monotony of course, mildness of symptoms, and favorable prognosis, it would seem to be the best suggested so far.

CHRONIC PYKNOLEPSY

In the group of recovered patients above described, attacks ceased in all of these at least by the age of 18 years. In the literature there are recorded only seventeen cases* showing typical pyknoleptic syndromes

*Rosenthal, Cases 27, 28, 29, 30, 31, 33, 34, 35, and 36; Stier, Case 12; Bolten, Case 6; Friedmann, Cases 6 and 8 (1906); Pohlisch, Case 26; and Rohde, Cases 4, 5, and 6.

that have begun before puberty and have extended to the age of 18 years or beyond and were still active when last observed. They are given in Table VII.

TABLE VII

AGE OF ONSET (YR.)	AGE LAST OBSERVED AND STILL ACTIVE (YR.)	AGE OF ONSET (YR.)	AGE LAST OBSERVED AND STILL ACTIVE (YR.)
4	19	8	25
4	25	8	30
5	18	9	18
5	22	9	19
5	38	9	25
6	18	10	23
6	24	12	21
6	28	12	22
8	21		

One might consider these as chronic cases of pyknolepsy although of course this is a very small group and further study is necessary before one could draw definite conclusions or say that they might not stop at some later period. One case, Rosenthal's Case 32, which he described as chronic, we discarded because it was stated that some deterioration had occurred.*

The other seventeen all show essentially the same features and fit into the general picture of pyknolepsy. Some have certain striking differences, however. In three of these there were convulsions occurring *during the course* of the pyknoleptic illness. A patient of Rosenthal's, Case 31, had grand mal at 22 years of age during rheumatism (pyknolepsy, age 3 to 30 years plus); another of Rosenthal's patients, Case 33, had one grand mal attack at the age of twenty (pyknolepsy, age 6 to 24 years plus); still another, Case 35, had five grand mal seizures during a cold at the age of 5 (also given as the date of onset of pyknolepsy) and since then grand mal attacks about every six months (pyknolepsy, age 5 to 18 years plus). There seem to be no essential differences in the symptomatology of these three cases with occasional grand mal attacks and the other eleven.

Other differences were: Three of the seventeen cases showed aura; one (Stier, Case 2), stated that he obtained a certain feeling of heat extending up from his abdomen to his head immediately preceding the attack; (Rosenthal, Case 29) made motions as if "to ward off an attack"; (Rosenthal, Case 33) experienced giddiness preceding the attacks; and (Rosenthal, Case 31) showed postattack headache and dizziness. Another interesting difference is that 8 out of the 14 showed paling with attacks and one showed flushing. Four showed increase of

*This patient had attacks beginning at the age of 12 years and which were still present at 30 years of age but he had had grand mal seizures from 15 to 18 years of age, at times three a day. Rosenthal included this case because of the continuation of typical small attacks. We consider it of some interest that the small attacks continued after the cessation of the grand mal and that he noted that deterioration seemed to lessen after the grand mal ceased. However, it would seem unsuited for study of this special group.

attacks at menstruation and 3 showed decrease. This is a proportionately greater increase with menstruation than seen in the 42 cases previously described where there were 9 females who reached the age of twelve or above; in these, none were increased by menstruation but (Stier, Case 2) was said to have ceased when menses began at 13 years of age. Four out of the 14 (29 per cent) showed positive family history of epilepsy. Thirteen out of the 17 were females. Infection was noted to cause temporary cessation in 2 cases and decrease in 1.

SUMMARY

Comparing these chronic cases with the 42 cases with spontaneous recovery, we see then in chronic pyknolepsy a tendency to have occasional grand mal attacks *interspersed* with the pyknoleptic ones; more vasomotor disturbances; possibly a greater tendency to be influenced by menstruation; more subjective sensations before and after attacks; and more cases in females than males. Although this series is quite small and needs further additions to draw definite conclusions, we venture the opinion that some cases occasionally showing these atypical features will probably stand a greater chance of running a chronic course than those without them.

CONCLUSIONS

From the 299 cases in the literature described as pyknolepsy, we present a statistical study of the symptomatology and course of all of those cases recorded as recovered and observed for a period of two or more years symptom-free. These total 42 in number. Tables are given showing in detail the symptoms of these cases. In general they show the following characteristics:

1. Even distribution between males and females.
2. Onset between the ages of 2 to 13 years.
3. Cessation between the age of 5 and 18 years with a peak (24 per cent) ceasing at 11 years.
4. Duration of illness from a few months to 10 years with the largest number lasting two years.
5. Generally a monotonous course with occasional attack-free periods varying from an occasional free day to a free period of three months; in general these free periods were rare and did not recur in one patient on more than three occasions.
6. Frequency variation from 1 to 150 a day, usually from 10 to 50.
7. Duration of attacks from one second to two minutes; usually ten to twenty seconds, rarely a single attack lasting over a minute.
8. Consciousness generally only partially affected though amnesia was usually complete.
9. Other features of attacks:

a. Frequent symptoms (in more than 10 cases): blinking, eyes rolled upward, gross bodily motions, amnesia.

b. Infrequent symptoms (4 to 10 cases): mumbling, smiling, taking steps, swaying, incontinence, fixed pupils, night attacks, continuing preceding motions automatically.

c. Rare symptoms (3 or fewer cases): eyeballs turned laterally, aura, postattack sensations, vasomotor signs, dropping objects, falling (no injury), ability to interrupt attacks on command.

10. The attacks are usually little affected by outside circumstances; they are decreased briefly by luminal, bromides, suggestion, and activity, and were occasionally noted to be increased by fatigue, constipation, weather, luminal, bromides, fear, excitement, and anger.

11. Mental characteristics: A number of patients were described as having minor personality disorders. Generally these would seem to be more the result than the cause of the disease. The attacks seemed to occur regardless of circumstances but they were occasionally precipitated by anger and excitement and rarely decreased a few hours or weeks by suggestion. The intelligence of the patients was usually high and remained so.

12. Family history of epilepsy was present in 19 per cent of the cases.

13. Past history and physical status showed six patients with abnormal birth, four presenting minor neurologic residue and twelve others with minor physical defects. We believe this is a fairly high percentage of abnormal births and physical defects and therefore do not agree with the early concept that this disease occurs usually in otherwise physically well children.

14. Grand mal epilepsy: Five of the cases had major seizures during their life time, either in infancy or just before pyknolepsy began. In none of the cases was there any evidence of grand mal epilepsy *during* the course of pyknolepsy. Only one case showed grand mal epilepsy after pyknolepsy began and this was for a three-month period just after its termination.

PROGNOSIS

Owing to the small number of cases recorded we hesitate to give too definite criteria for prognosis. However, from this study it is our opinion that with a few exceptions cases showing the following characteristics belong to the group of pyknolepsy and will have a good chance of spontaneous recovery, if they (1) show an onset between the age of 2 and 13 years; (2) run a fairly monotonous daily frequency of 3 to 150 a day; (3) have individual attacks generally lasting not over thirty seconds; (4) show only partial clouding of consciousness; (5) can have attacks readily precipitated by hyperpnea; (6) do not react consistently to drugs or in general to emotional situations; and (7) throughout the course of illness do not show the frequent accompaniments of grand mal seizures, such as falling with injury, tongue-biting, marked vasomotor changes, pulse changes, aura, or postattack sensations.

It is thought that cases *do not* belong to the pyknolepsy group and in general have an unfavorable prognosis if they (1) begin before the

age of 2 or after the age of 13 years; (2) have frequent individual attacks lasting over one minute; (3) show deep unconsciousness with inability to avoid dangerous situations; (4) show great variation in nature and frequency from day to day, especially when showing many attack-free periods of days or weeks; (5) show favorable reactions to luminal or bromides over a long period of time; (6) if attacks cannot be precipitated readily by hyperpnea; (7) if there is any evidence of deterioration, of falling with injury, crying out, tongue-biting, fecal incontinence, marked vasomotor changes, postattack sensations, fatigue or sleepiness, increased pulse rate with attack; and (8) have epileptic seizures *during* the course of the pyknoleptic illness.

CHRONIC PYKNOLEPSY

Out of the 299 cases in the literature, 17 were noted to have attacks still present after the age of 18. These might be considered a chronic group. In these 17 cases the symptomatology was much the same as in those that had spontaneously recovered, only their symptoms were a little more severe. It would seem therefore that a small number of cases of pyknolepsy may continue for many years beyond the termination of the growth period without deterioration or appreciable change. Though the chronic cases described did not develop into severe grand mal epilepsy, they occasionally showed an interspersed grand mal attack, a characteristic not seen in any of the cases that recovered.

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ADVANCES IN TREATMENT OF MENINGITIS

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UNLESS one reviews the past history of the treatment of meningitis, it is scarcely possible to realize the progress made in the therapy of this disease. Until the work of Jochmann[1] and Kolle and Wassermann,[2] closely followed by Flexner,[3] all varieties of meningitis were nearly 100 per cent fatal. But the production and development of antimeningococcus serum by those investigators did much to reduce the mortality from epidemic meningitis. The prognosis for other forms of bacterial meningitis consisted of little more than a forlorn hope, although occasionally recoveries occurred and were reported.

Largely because of Flexner's work and on account of his expressed opinion that antimeningococcus serum was antibacterial in action but possessed practically no antitoxic properties, intrathecal administration was the method of choice. Nevertheless, fatality rates for treated patients were often excessively high, and for that reason some opposed the use of serum. Others endeavored to produce a more efficient remedy. Specific monovalent as well as polyvalent antisera were recommended. Questions were raised as to the preference for a serum high in agglutinins or high in precipitins. It often was felt that an agglutination test should be made prior to the administration of an antiserum. Great stress frequently was placed on the type of meningococcus responsible for the infection. Whether the type was one, two, three, or four was thought to be a matter of vital importance. Bacteriologists,[4] in particular, emphasized this point, and some continue to do so.

Through nearly all the years of serum therapy, from 1906 to 1933, there were but few[5, 6] who deviated from the intrathecal mode of administration. However, some[7] maintained serum was more effective when given intracisternally rather than intraspinally. Others advocated the intraventricular route for infants, and a few, even in comparatively recent years, went so far as to trephine the skull in older patients so that this procedure could be carried out. During all that time, scant consideration was given to the administration of serum in any manner but intrathecally. Sometimes complement was injected also. Thought was focused primarily on producing a more efficient remedial agent, a serum with greater bactericidal powers. In 1931, Ferry, Norton, and Steele[8] reported on the elaboration of a soluble toxin by the meningococcus. Later, Ferry[9] developed a meningococcus antitoxin (1932).

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Through the courtesy of Dr. Ferry, the first clinical trial of meningococcus antitoxin was made in the Contagious Disease Department of the Cook County Hospital in November, 1933.[10] In the beginning this new serum was given both intraspinally and intravenously. As its merits became more and more apparent, the amount of antitoxin for intravenous administration was increased progressively while the quantity for intraspinal injection was proportionately reduced. Eventually, intraspinal therapy was discontinued entirely.[11] This was at about the close of 1934, and no intrathecal therapy was resorted to after that time. A corresponding method of treatment was soon adopted at the Municipal Contagious Disease Hospital[12] and also at the Children's Memorial Hospital for patients on my service.

Jochmann had advocated intravenous treatment as well as intraspinal as early as 1906. Herrick, of New York, recommended large doses of antimeningococcus serum undiluted for septicemic patients in 1918.[5] We[6] also used a similar method of administration to a limited extent at about that time in the Cook County Hospital. Irregularly for the next fifteen years serum was given intravenously as well as intraspinally to adult patients on one of the services. Although others sometimes administered antiserum intravenously to patients with meningococcemia, the intravenous route was not popular and, in fact, was opposed by most physicians. Generally this route was thought justified only if there was evidence of blood stream infection. However, serum intravenously seemed effective, and it was our belief that we were the first to adopt a policy of exclusive intravenous therapy[13] for all forms of meningitis whether blood stream infection was apparent or not.

Several hundred patients were treated exclusively by the intravenous method from 1935 until 1937 when sulfanilamide became available. Although at the beginning there seemed to be a striking superiority for Ferry's antitoxin compared with standard serums, a year later no marked preference could be claimed on the basis of the recovery rates. However, antitoxin-treated patients seemed to have fewer complications.[14] In either instance the serum or antitoxin was given by the drip method in large doses well diluted in 10 per cent dextrose in normal saline to which epinephrine hydrochloride was always added. With the institution of this exclusive intravenous method, the fatality rate, which had averaged approximately 50 per cent[15] for the twenty preceding years, showed a sharp decline. In one year, among forty-three patients who were less than 20 years of age, the fatality rate was only 2.3 per cent. In larger groups of patients, including those of all ages, loss of life was consistently less than 30 per cent and sometimes ranged from 9 to 15 per cent. We have not had many meningitis patients during the past two years, but from August, 1937, to August, 1938, among forty-four consecutive patients treated in the Contagious Department of the Cook County Hospital there were only two deaths, or a fatality

rate of 4.5 per cent. One of those who failed to survive was a 9-year-old boy who had been receiving intraspinal treatment previously in another hospital. The other was a 62-year-old man. In this group of forty-four patients, ten were treated exclusively with sulfanilamide; for the others, standard serum or meningococcus antitoxin was used. When these figures are contrasted with mortality rates of 65 to 90 per cent,[15] which were reported but a few years ago, the improved results seem rather remarkable.

Some clinicians who professed[16] to follow the plan of treatment used at the Cook County Hospital reported that equally good results were not obtained. However, in their published papers it was made apparent that serum or antitoxin was sometimes given intrathecally, and the amount of antiserum administered intravenously[17, 18] was often far from sufficient for the best results. When our patients were treated exclusively with an antiserum, the average dose approximated 300 c.c. In a few instances where the outcome seemed to be particularly desperate, I have given more than 2,000 c.c. of antiserum, usually antitoxin, and have seen the patient recover without complications. Intravenous doses of 15 c.c. to 30 c.c. are likely to mean little or nothing.

When we adopted the intravenous route exclusively for serum-treated patients, regardless of the duration of the illness, we were impressed particularly with three facts: (1) Fatality rates were markedly reduced; (2) recoveries were much more prompt; and (3) complications were few. These points not only offered convincing evidence that intraspinal therapy is not necessary for meningitis, but they also suggested that intrathecal treatment may be actually harmful. In support of this view there were seventeen patients who had loss of vision in one or both eyes and twenty who were totally deaf among those who recovered at Municipal Contagious Disease Hospital from 1933 to 1935. These complications occurred among 233 patients[12] who were treated both intrathecally and intravenously. The fatality rate was 26.6 per cent, a figure which we considered very satisfactory and which we attributed to the combined method of therapy. Standard antimeningococcus serum was used; no meningococcus antitoxin was given. Since discontinuance of all intrathecal therapy there have been only one or two instances in which loss of sight or loss of hearing occurred after institution of treatment among several hundred patients at Cook County and Municipal Contagious Disease Hospitals. Panophthalmitis or deafness was present when some of the patients were admitted.

Following the success of exclusive intravenous therapy for all classes of meningitis, we began to reduce to a still greater extent the number of spinal taps for the purpose of drainage.[19] Our results seem particularly interesting in view of the measures that some were advocating then and continue to adhere to at the present time. There were published reports from hospitals where lumbar punctures were done every six hours during the first few days, then every twelve hours, and later every

twenty-four hours. Some believed in through-and-through drainage by inserting needles in the suboccipital and lumbar regions and washing out the spinal canal with normal saline. There was also the method of continuous drainage[20] from the lumbar region by means of a specially devised cannula. There were described special and sometimes intricate procedures for relieving blocks[21] in the aqueduct of Sylvius. But what happened when some of these ingenious undertakings were carried out? Death was not infrequent and hydrocephalus not rare. Within the past few years we have reduced the number of intrathecal punctures to such a degree that many of our patients have but a single tap, which usually is required for diagnostic purposes. If the meningococcic patient is an outstanding example of meningococcemia with many petechiae and the diagnosis is confirmed by a positive blood culture, a spinal tap is not necessary and often is better omitted. During the past several years preceding the introduction of chemotherapy, we treated successfully about forty patients without any spinal puncture, and many of the recoveries were spectacular. The old theories in respect to the dangers of intracranial pressure and the belief that permanent good can be accomplished by frequent withdrawal of spinal fluid had best be forgotten. The use of a manometer to determine pressure is sometimes of interest but without significant value. After an initial examination of spinal fluid for the diagnostic advantages that may be required, including the presence of any organisms and possibly their type or other characteristics, future cell counts, sugar determination, and other tests are usually not necessities for prognostic purposes. Generally, the course of the illness can be judged satisfactorily from the clinical aspects without recourse to spinal fluid analysis.

When sulfanilamide[22] was first used in the treatment of meningococcic meningitis, it was administered intraspinally. We believe most clinicians finally have abandoned the intrathecal use of this drug. And so it seems that not until the coming of chemotherapy were many willing to concede that a meningitis patient could be treated properly without intraspinal therapy. But after more than a score of years in contagious disease hospital experience, we believe a great advance in the management of meningitis came in 1934 when we discontinued intrathecal therapy.

When concerned with meningococcic meningitis in the early days of serum treatment, it often seemed necessary to determine which one of the four Gordon[23] types was responsible for the disease. The prime purpose of this identification was to permit the selection of an antiserum which possessed the desired agglutinating properties. But practical experience frequently demonstrated that a standard serum high in agglutinins did not always produce the best clinical results. With Ferry's meningococcus antitoxin we were much less interested in the type of infecting organism and gave more consideration to the degree of tox-

TABLE I

PNEUMOCOCCIC MENINGITIS

FOURTEEN RECOVERIES WITHOUT INTRASPINAL THERAPY

ADMITTANCE DATE	AGE (YR.)	SEX	COLOR	CELL COUNT SPINAL FLUID	TYPE	DAYS ILL PRIOR TO HOSPITAL ADMITTANCE	DAYS IN HOSPITAL	SERUM UNITS	CHEMOTHERAPY	LUMBAR PUNCTURES
7/12/38	8	F	W	7,900	6*	1	6	768	Prontylin	2
9/ 8/38	15	M	B	1,500	1	6	28	140	Sulfanilamide	3
9/11/38	14	F	B	8,450	17*	2	34	220	Sulfanilamide	4
10/19/38	76	M	W	1,500	31	1	33	300	Sulfanilamide	2
3/15/39	12	F	B	10,000	23	3	16	120	Sulfapyridine and Sulfanilamide	3
1/ 6/40	14	F	W	++++	18	11	31	350	Sodium sulfapyridine	2
1/23/40	42	F	W	100,000	10	8	19	400	S. sulfapyridine	1
6/ 6/40	20	F	W	200	Bile Solub.	2	13	0	S. sulfapyridine	1
1/14/41	11	M	B	7,000	18	9	19	400	S. sulfapyridine	1
2/10/41	12	M	W	2,000	7	2	13	0	S. sulfapyridine	1
4/ 7/41	7	F	W	14,000	3	2	12	0	S. sulfapyridine Sulfathiazole	1
10/ 2/39	6	F	W	2,000	13	12	26	100**	S. sulfapyridine	1
2/ 9/41	5	M	W	5,850	4	2‡	22	200	S. sulfapyridine	3
2/13/41	5	M	W	6,250	18	2§	42†	400	S. sulfapyridine	2

Patients from Cook County Contagious, Municipal Contagious, and Children's Memorial Hospitals.

First seven patients previously reported.[34]

All figures for serum are in thousands.

*Cultures positive for both blood and spinal fluid.

**Meningococcus antitoxin.

†Postinfectious nephritis.

‡Developed measles fourth day in hospital.

§Developed measles twenty-third day in hospital.

S. = sodium.

emia from which the patient suffered. Our principal attack was directed toward the toxemia of the disease, not against the organism.

In respect to pneumococcic meningitis, we are now perhaps passing through a somewhat similar transition. It has been necessary to type the organism in order to administer a specific serum. Moreover, considering that during a period of about twenty-seven years preceding specific pneumococcic serums we had but two recoveries from pneumococcic meningitis in the Contagious Disease Department of the Cook County Hospital, we must concede from recent experience that[24] specific serum is effective. Within the past two years there have been more than ten recoveries at County Contagious Hospital and one at Municipal Contagious Disease Hospital. All but four of these patients were treated with both specific serum intravenously and one of the sulfonamides. None had any intraspinal therapy. Some had but a single lumbar puncture and few had more than two spinal taps. One of our last pneumococcic meningitis patients (type 7), a boy 9 years of age, was treated solely[24] with sulfapyridine. He had one lumbar puncture, and his recovery was complete in two weeks. Two other patients were similarly treated. One of these (type 3) completely recovered within two weeks. In this instance sulfathiazole was the drug administered after twenty-four hours of treatment with sodium sulfapyridine. The third patient is not likely to survive. It seems probable that chemotherapy without serum[25] will be shown eventually to produce as satisfactory results in the treatment of pneumococcic meningitis as in meningococcic meningitis.

Recently, it has been said that sulfathiazole does not enter the spinal fluid when administered orally.[26, 27] We feel there is reason to question the accuracy of that assertion although intravenous administration is preferable. There have been comparatively few meningitis patients in our contagious disease hospitals during the past year. However, among the number was a 24-year-old woman with a staphylococcic infection. Cultures from both blood and spinal fluid were positive. Rigidity of the neck was marked. Strabismus and a right facial paralysis were also present. She was treated orally with sulfathiazole and made a complete recovery, including the disappearance of the facial paralysis and strabismus. There was but one spinal tap. Consequently, there was no opportunity to obtain a sulfathiazole level in the spinal fluid. Blood levels ranged from 3.44 mg. per cent to 6.55 mg. per cent. For successful treatment we usually seek much higher concentrations when using any of the other sulfonamides.

I have been told by an eminent authority that influenzal meningitis patients cannot be treated in the same manner as meningococcic patients. In other words, even if intraspinal therapy is not required, drainage is. But we have very definite evidence that satisfactory results for influenzal meningitis patients are possible without frequent intrathecal

TABLE II

INFLUENZAL MENINGITIS RECOVERIES WITHOUT INTRASPINAL THERAPY

HOSPITAL ADMITTANCE DATE	AGE	SEX	WHITE BLOOD CELL COUNT	CULTURE		CELL COUNT SPINAL FLUID	TIME ILL PRIOR TO HOSPITAL ADMITTANCE	DAYS IN HOSPITAL	NO. LUMBAR PUNCTURES	TREATMENT	
				BLOOD	SPINAL FLUID					SERUM	CHEMOTHERAPY
5/ 2/32	4 yr.	F	21,200		Positive	5,770	2 days	21	1	0	Had skull fracture
5/11/34	8 yr.	F	41,500		Positive	8,800	2 days	43	21	348 I. S.	
3/14/35	13 yr.	F	29,300		Positive	3,000-10,400	2 days	15	9	122 I. S. 75 I. V.	
5/27/37	1 yr.	M	9,300		Negative	316-2,061	56 days	41	8	I. S.	Doubtful case; sulfanilamide
8/ 6/38	3 mo.	F	5,800	Positive	Positive	12,750	3 days	8	1	0	Sulfanilamide
5/ 8/39	1 yr.	F	24,000		Positive	1,550	3 days	30	4	0	Sulfapyridine
6/ 8/39	6 mo.	M	28,800	Negative	Positive	1,253	7 days	30	3	0	Sulfapyridine
11/24/39	1 mo.	M	16,300		Positive	6,150	2 days	55	7	0	Sulfapyridine
1/17/40	3 yr.	F	18,000		Positive	1,800	10 days	63	2	0	Sulfapyridine; recovered in 19 days; S. F.
2/ 8/41	4 yr.	F	29,400	Positive	Positive	4,800	1 day	27	1	I. V.	Sodium sulfapyridine Oral, Rect. and I. V.
3/28/41	3½ yr.	F	32,000	Negative	Positive	18,000	18 hr.	21	2	I. V.	Sodium sulfapyridine
2/25/41	3½ yr.	F	23,300	Positive	Positive	13,000	20 hr.	45	5	I. V.	Sulfapyridine, sulfanilamide, and sulfathiozole
1/27/40	4 yr.	M	14,100		Positive	1,000	5 days	28	1	0	Sulfapyridine and sulfanilamide
2/13/41	2 yr.	F	24,200		Positive	1,000	8 days	17	2	0	Sulfapyridine and sulfanilamide
10/ 8/40	1½ yr.	M	18,500	Positive	Positive	620	2 days	33	1	0	Sulfapyridine and sulfanilamide
1/ 8/40	2½ yr.	M B	28,200		Positive	50,000	2 days	31	1	0	Sulfapyridine and sulfanilamide

Patients from Children's Memorial, Municipal Contagious, and Cook County Contagious Hospitals.
Of sixteen recoveries, thirteen had no intraspinal therapy.

TABLE III

STAPHYLOCOCCIC MENINGITIS

FOUR RECOVERIES WITHOUT INTRASPINAL THERAPY

CASE	ADMITTANCE DATE	AGE (YR.)	SEX	BLOOD COUNT		CULTURE		CELL COUNT	DAYS ILL PRIOR TO HOSPITAL ADMITTANCE	DAYS IN HOSPITAL	NO. LUMBAR PUNCTURES	TREATMENT		SULFANILAMIDE	SULFATHIAZOLE
				RED	WHITE	BLOOD	SPINAL FLUID					ANTITOXIN	BLOOD TRANSFUSION		
1	4/20/38	1	F		20,800	Positive	Positive	750	4	76	2	540 c.c.	Whole blood I. M. I. V.	×	
2	12/12/38	14	M		21,300	Positive	Positive	120	7	33	1	0	17	×	
3	8/ 9/38	6	M	4,500	22,500	Positive	Positive	2,500	5	81	6	0	×	×	
4	3/12/40	24	F	4,040	15,150	Positive	Positive	730	5	20	1	0	550 c.c.		×

Patients from Municipal Contagious and Cook County Contagious Disease Hospitals.

1. Admitted for scarlet fever. Rigid neck 4-22; spinal fluid, *Staphylococcus albus.*
2. *Staphylococcus albus.* Developed abscess and osteomyelitis left ankle.
3. Hemolytic *Staphylococcus aureus.* Vesicles about painful joints.
4. Hemolytic *Staphylococcus albus.* Joints swollen and painful.

taps. In the past when numerous punctures were made, it was usually but a short time before the spinal fluid became so purulent that it would not pass through the needle. Within the last few years we have had a number of recoveries from influenzal meningitis, a disease that used to be almost as fatal as tuberculous meningitis. Two of our recovered patients were treated solely with serum and some with both serum and sulfapyridine, but chiefly with the drug alone. Most of these patients had few lumbar punctures; some had but one, and only three received any intrathecal treatment. In the Children's Memorial Hospital, Municipal Contagious Disease Hospital, and the Contagious Disease Department of the Cook County Hospital there have been more than fifteen patients recover within the past few years. Ten of the total number were patients in Children's Memorial Hospital.

Fig. 1.—*A*, Italian girl, 14 years of age; pneumococcus Type 18; serum, 400,000 units; sulfapyridine I. V., 7.5 Gm.; sulfapyridine orally, 165.5 Gm.; lumbar punctures, 2.

B, Colored child, 2½ years of age; influenzal meningitis; sulfapyridine, 71.3 Gm. orally; lumbar punctures, 1.

C, Indian woman, 42 years of age; pneumococcus Type 10; serum, 400,000 units; sulfapyridine I. V., 8 Gm.; sulfapyridine orally, 93.6 Gm.; lumbar punctures, 1.

Staphylococcic meningitis offers an outstanding illustration of what may be accomplished without intrathecal therapy. Very recently Donovan[28] stated that there have been reported only nine recovered cases of staphylococcus meningitis. We have had four patients recover from meningitis in which the inciting organism was the staphylococcus. One of these four was treated with staphylococcus antitoxin and prontylin; two had sulfanilamide and blood transfusions. The last patient was a woman who was treated solely with sulfathiazole and whose case was cited previously. For no one of this group was any intrathecal

therapy adopted. The ages ranged from one to twenty-four years, and in each instance the diagnosis was established by the laboratory.

The foregoing comments accentuate what appears to be the final goal of accomplishment in the treatment of meningitis. In most instances suitable chemotherapy is sufficient for any form of meningitis that is amenable to treatment. In purpuric or other unusually severe forms of meningococcic infection it is probably advisable to use intravenously large doses of meningococcus antitoxin or standard antimeningococcus serum in addition to chemotherapy. Otherwise, sulfanilamide and sulfapyridine are equally effective for the purpose. Sulfathiazole is also frequently satisfactory. We have found sulfapyridine acceptable for any form of meningitis in which there is a chance for a favorable response except staphylococcic infections, for which we have not tried it.

Patients with streptococcic meningitis respond well to chemotherapy and require no special consideration here. However, there is still one insurmountable pinnacle in the field of bacterial meningitis. The tuberculous form has not been conquered. In time it undoubtedly will be.

A survey of the accompanying tables shows that among thirty-four recovered meningitis patients of various kinds only three received any intraspinal therapy.[29] Special attention is also directed to the small number of lumbar punctures. This fact emphasizes a contention we have made for some years, that frequent lumbar punctures for the purpose of drainage are not necessary. The photograph shows an Italian girl, a colored child, and a Mexican woman. All three of these patients were treated with sulfapyridine. The child with influenzal meningitis was not given any serum. The two older patients who had pneumococcic meningitis received specific type serum.

COMMENT

Recoveries without intraspinal therapy are recorded as follows: thirteen influenzal meningitis patients (three others with intraspinal treatment); fourteen pneumococcic meningitis patients; four staphylococcic meningitis patients.

CONCLUSIONS

We believe the real advances in the treatment of meningitis during recent years are as follows: (1) Discontinuance of intrathecal therapy; (2) abandonment of the theory that frequent lumbar punctures are either necessary or beneficial; (3) introduction of chemotherapy.

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A STUDY OF INSULIN TOLERANCE AND GLUCOSE TOLERANCE TESTS ON NORMAL INFANTS

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With the discovery and use of insulin in the treatment of diabetes mellitus, new functions of the pancreas were immediately conceived and studied. Symptoms caused by an overdose of insulin were observed, and within a few years Harris[1] described a clinical entity characterized by similar symptoms in the nondiabetic patient. Thereupon many reports filled the literature describing similar patients showing hypoglycemic reactions due to various causes. In the years that have followed, a tremendous amount of information relative to hypoglycemia has been presented and the symptoms have been studied thoroughly. Such studies of reactions of nondiabetic patients to insulin have been presented in the greater part by psychiatrists using insulin as a method of treatment. The syndrome characterized by hypoglycemic symptoms appearing in children has also received its share of investigation and seems more and more to be an important clinical entity for the pediatrician's consideration. An excellent study of this syndrome was published by Hartmann and Jaudon[2] although many other worthy investigations have appeared. With such voluminous material already available, one may wonder why an article is written at this time. Our reason is the result of curiosity which was produced when an infant had convulsions without an apparent cause but with the associated finding of a low blood sugar. The attempt to evaluate the blood sugar findings and to prove or disprove a hypoglycemic basis for the convulsions involved the use of the insulin tolerance and dextrose tolerance tests. Having done the tests, a criterion for judging the curves obtained was sought, but no satisfactory standard for infants was found. It was then decided to perform both tests on several normal infants hoping thus to obtain a norm for comparison.

METHOD

Our method was to be relatively simple and adaptable to either office or hospital laboratory, thus insuring practical results which the pediatrician could obtain on his own patients even in small laboratories. This was thought preferable to obtaining values by a more difficult method, or reporting "true" blood sugars instead of the usual "apparent" sugar values of the blood. Tolerance tests require numerous samples of blood; therefore, a micromethod of determining the blood sugar was chosen rather than the ordinary venipuncture method, which is not as well adapted to children as it is to adults. We used Boyd's method, as published by Brennemann,[3]

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not because of any inherent superiority, but because the source of information is in a standard text usually available to pediatricians. Since low blood sugar values were obtained in the insulin tolerance test, a 50 mg. standard was used for greater accuracy. To determine the accuracy of the method and the possible degree of error, three specimens of blood were collected one after the other in rapid succession from one patient. We found that the greatest variation was 9.8 per cent. From this one might assume that the values obtained in the tests have a plus or minus variation of 10 per cent. With the numerous sources of error in any micromethod, it would probably be more accurate to assume a variation of 15 per cent. Variations in two individuals are shown by Tables I and II and Fig. 1. Although the blood sugar values as reported in the accompanying tables are carried beyond the decimal point, the last figure is obviously not significant. To determine whether the method gave values of "true" or "apparent" sugar, three samples of blood were fermented and proved that the results of the method gave "apparent" sugar values.

TABLE I

VARIATIONS OF BLOOD SUGAR IN ONE INDIVIDUAL

AGE	NO. OF PATIENT	CONDITION	TIME IN MINUTES				
			0	20	40	60	120
4½ mo.	9051	Not fasting; no insulin	100.0	90.9	83.4	90.0	78.8
		Fasting; no insulin	77.5	62.5	71.4	82.7	71.0
		Fasting; insulin tolerance test	58.5	45.4	31.2	44.0	Reaction; test stopped

TABLE II

INSULIN TOLERANCE TESTS ON ONE INDIVIDUAL

AGE	NO. OF PATIENT	FASTING	TIME IN MINUTES			
			20	40	60	120
7 mo.	9093	71.4	58.8	50.0	49.0	52.7
		76.9	62.0	41.6	50.0	49.0
		86.9	62.5	50.0	55.0	45.3

Blood sugar, mg. per cent, after injection of ¼ unit regular insulin per kilogram of body weight.

The injection of 0.25 unit of regular insulin per kilogram of body weight with blood sugar determination before and 20, 40, 60, and 120 minutes after the injection constituted the insulin tolerance test.

The glucose tolerance test consisted of giving 1.75 Gm. of dextrose per kilogram of body weight by gavage with blood sugar determinations before and at one-half-, one-, one and one-half-, two-, and three-hour intervals after the glucose was given. In the majority of instances, each test was done in the morning with the patient in a fasting state for eight hours; in no instance was a test done within six hours after the child had been fed. Rudesill and Henderson[4] in doing blood sugar determinations on 144 nondiabetic children showed that no significant difference existed between fasting and 11 A.M. blood sugar values; therefore, our results of fasting levels and those taken not sooner than six hours after a meal should be comparable. The insulin tolerance usually followed the dextrose test if the latter was done and was separated by one day in the majority of cases during which the infant received his usual diet. Other than two patients classified as "abnormal," whose records will be briefly reviewed, none of the subjects exhibited symptoms of hypoglycemia and all were "normal" as judged by the absence of fever, of apparent infection at the time of the tests, and of symptoms relative to other

diseases. Bertazolli[5] has shown that the blood sugar values of children based on glucose tolerance tests show a high curve when the child receives a ketogenic diet, a curve higher when receiving a high fat rather than a regular diet, and the lowest drop in the curve appears with a high carbohydrate diet. Each subject in our series received a regular diet according to his age. Diets were not changed immediately preceding or during the tests and no patient received a definite ketogenic, high carbohydrate-low fat or low fat-high carbohydrate diet.

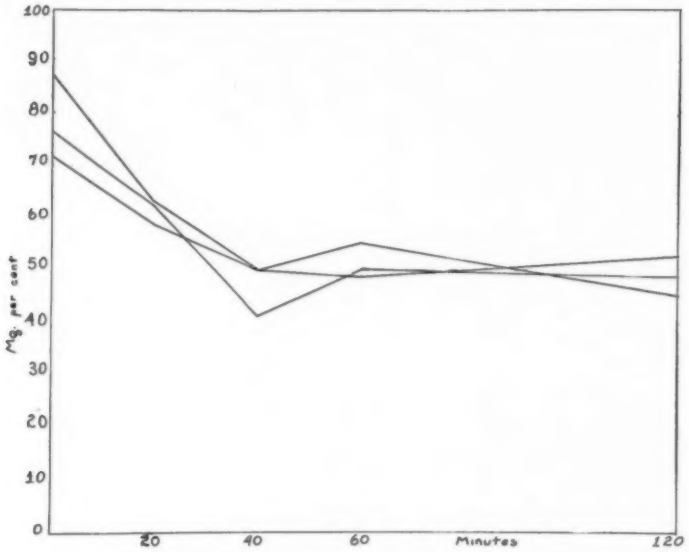

Fig. 1.—Variations of the insulin tolerance test as performed on one normal infant 7 months of age.

RESULTS

The insulin tolerance test was done on a total of twenty-five normal infants ranging in age from 2 to 22 months, and twelve of these also were the subjects of the glucose tolerance test. The results obtained are shown in Tables III and IV. It is seen from these tables that the range of normal blood sugar values was 52 to 95 mg. per cent with an average value of 71.5 mg. per cent for the thirty-seven fasting determinations. The fasting values do not vary in proportion to the age of the patient as is borne out by the fact that the difference between the levels of the youngest and oldest patient of the group was less than 1 mg. Similarly, if one compares the average fasting value of the twelve youngest with the thirteen oldest patients of the group on whom the insulin tolerance test was done, the difference is less than 1 mg. The point of minimum blood sugar occurred two hours after the injection of the insulin in 44 per cent of the patients, after one hour in 28 per cent, after forty minutes in 24 per cent, and within twenty minutes in 4 per cent. It is seen from Table III that there is no direct proportional decrease in the blood sugar when compared to the age of the

TABLE III

INSULIN TOLERANCE TESTS

AGE (MO.)	NO. OF PATIENT	FASTING	TIME IN MINUTES			
			20	40	60	120
2	9014	77.0	39.5	21.5	27.7	42.5
4	9129	81.9	60.6	32.0	47.6	38.9
4½	9051	58.5	45.4	31.2	44.0	
5	9124	76.9	58.7	50.0	47.8	49.0
5	9099	69.0	50.0	40.0	55.0	37.0
5	9071	84.0	49.0	40.0	37.5	
6	9019	62.5	44.4	30.0	37.0	20.0
6	9092	74.1	42.6	30.3	45.4	43.5
7	9093	76.9	62.0	41.6	50.0	49.0
8	9138	88.5	78.9	58.8	57.6	61.7
9	9113	71.4	55.6	52.7	62.5	45.4
10½	9108	69.0	56.1	45.5	58.8	43.4
12	9107	79.4	62.5	55.5	51.3	47.6
12	9117	71.4	66.7	56.5	50.0	50.0
13	9114	79.7	64.5	63.0	62.2	67.5
14	9059	64.5	49.0	41.7	36.7	33.3
14	9130	75.2	55.6	66.0	52.7	52.0
14½	9068	95.0	41.4	48.4	45.8	43.5
15	9101	67.3	58.8	66.6	57.2	52.6
17	9116	74.6	62.5	50.0	40.0	55.6
17	9084	66.6	60.1	50.0	44.4	45.4
17	9100	76.3	48.8	45.4	62.0	50.0
20	9073	64.5	41.6	43.5	45.4	40.0
20	9119	71.4	58.1	50.0	62.5	45.4
22	9102	70.9	66.2	65.3	52.6	50.0
Average Value:		73.6	55.1	47.0	49.2	46.2

Blood sugar, mg. per cent, after injection of ¼ unit regular insulin per kilogram of body weight.

TABLE IV

ORAL GLUCOSE TOLERANCE TESTS

AGE (MO.)	NO. OF PATIENT	FASTING	TIME IN MINUTES				
			30	60	90	120	180
2	9014	67.8	175.4	125.0	166.0	129.0	33.0
4½	9051	52.0	90.9	90.0	100.0	83.3	69.0
5	9099	64.5	133.3	178.6	135.1	102.6	89.3
5	9089	76.3	142.8	136.0	147.0	90.9	89.0
6	9092	73.5	133.3	153.8	146.0	95.0	71.9
6	9019	78.4	158.7	148.1	104.2	95.2	86.2
7	9093	76.9	153.8	200.0	154.0	95.2	71.4
14	9059	76.9	88.1	84.0	84.3	87.7	74.9
14½	9068	75.5	125.0	105.3	120.4	114.3	100.0
17	9084	72.7	124.2	101.0	117.0	105.3	75.7
17	9100	80.0	95.2	105.3	107.0	91.0	62.5
20	9073	66.6	101.0	93.9	93.1	90.9	86.9
Average Values:		71.75	126.8	126.7	122.8	98.4	75.8

Blood sugar, mg. per cent, after administration of 1.75 Gm. glucose per kilogram of body weight.

patient. If the values of the youngest twelve patients are again compared with those of the oldest thirteen, there is little difference except for the comparative average forty minutes after injection of the insulin when the younger group's average value is significantly lower than the older.

The peak of the glucose tolerance test was reached within thirty minutes after gavage in 50 per cent of the infants, within one hour by 25

per cent, and not until one and one-half hours by the remaining 25 per cent. Once again, the rapidity of rise was not proportional to the age of the patient. Three hours after the glucose was given, 33 per cent of the levels had almost returned to the fasting level of the respective patients, whereas 50 per cent remained at least 8 to 25 mg. above the fasting level; 16.6 per cent of the patients had a lower level of blood sugar at the completion of the test than they did at the beginning. The youngest infant, No. 9014, showed the highest rise obtained during the test and presented a second rise followed by a precipitous fall in the quantity of blood sugar to levels usually considered to be hypoglycemic; this is shown in Fig. 4. The least rise was shown by patient No. 9059, and a rise of only 11.2 mg. per cent was present at the peak of the test.

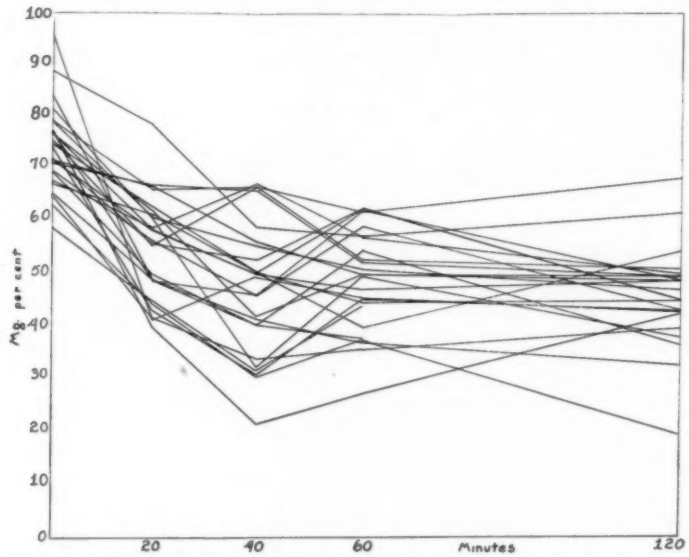

Fig. 2.—Scatter curve showing the results obtained by performing the insulin tolerance test on twenty-five normal infants between the ages of 2 and 22 months.

The results obtained in the group of twenty-five patients on whom the insulin tolerance test was done are shown in Fig. 2 and illustrate the great variation present. The average curve for the group is shown with the highest and lowest individual curves obtained in the insulin tolerance test in Fig. 3. The average curve of the group on whom the glucose tolerance test was done is graphically compared with the highest and lowest curves, those of the two patients referred to above, in Fig. 4.

DISCUSSION

Attacks of hypoglycemia have been noted in many adults, and there are many classifications of the etiology of such attacks. Clinically it may be said that there are all degrees of severity of the hypoglycemic

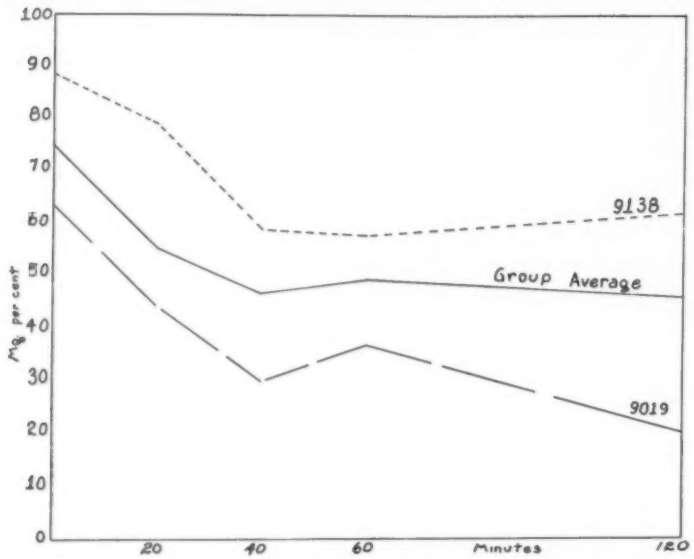

Fig. 3.—Comparison of the highest and lowest individual curves with the average curve of twenty-five normal infants obtained with the insulin tolerance test.

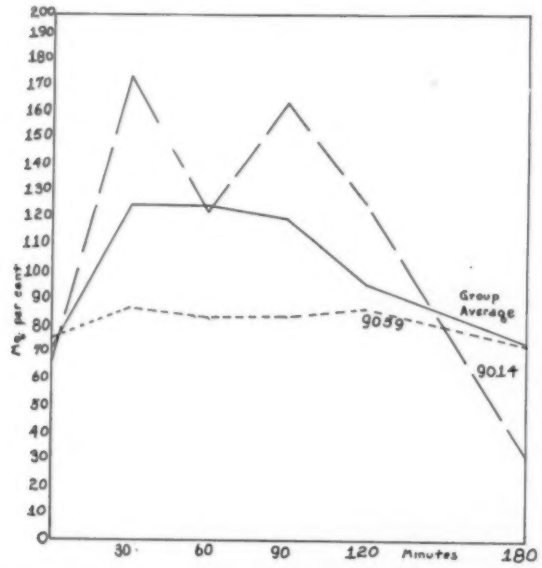

Fig. 4.—Comparison of the highest and lowest individual curves with the average curve of twelve normal infants obtained by the glucose tolerance test.

syndrome, from the occasional attack of weakness and hunger to convulsive seizures and coma. The presence of these symptoms is determined more easily in adults than in children unless they are severe; however, no infant having convulsions or coma should be allowed to escape having several blood sugar determinations done during one of the attacks. The causes and treatment of the various types of hypoglycemia and hyperinsulinism have been discussed fully in the literature.[6, 7, 8]

The insulin tolerance test is said to be of value in determining the probability of a hypoglycemic condition existing in a patient, for the response obtained during the test is much greater in the hypoglycemic than in the normal individual; the clinical reaction is said to be more severe and the blood sugar values much lower in the affected subject than in the normal. In performing the twenty-five insulin tolerance tests done in this study, severe symptoms necessitating the cessation of the test were encountered in only two infants. In the majority of cases, the infants became less active than usual and exhibited slight perspiration and hunger. In no instance were coma and convulsions produced. One may state that the test may be safely performed and that if severe symptoms appear, the condition may be relieved readily by means of increasing the blood sugar either orally or parenterally.

The dividing line between normal and abnormal blood sugar levels is not definite, and reports in the literature do not agree. The division is often given without qualifying the statement as to whether the values are "apparent" or "true" blood sugar. Hartmann,[9] in summarizing his experience in some 250 instances of hypoglycemia, is led to believe that a blood sugar level of 50 mg. per cent of "true" sugar is the dividing line; this corresponds, in his opinion, to approximately 70 mg. per cent of "apparent" blood sugar. He has presented insulin tolerance curves[2] illustrating the reactions obtained in several normal children as compared to the curves of proved cases of hypoglycemia; the difference is striking. In his series, the children were much older than the infants whose results are presented in this paper, and the difference in age led to this study in infants. Our results show that the curves produced by the insulin tolerance test on the twenty-five normal patients are lower than Hartmann's series of older children. In fact, as our method gave "apparent" blood sugar values, our curves are actually much lower than Hartmann's "true" blood sugar levels and the majority of patients, if judged by the blood sugar values alone, would be suspected of having the hypoglycemic syndrome. Since this is obviously not the case, it was decided to do the insulin tolerance test on several older patients, all of whom were over 2 years of age. While this latter group constitutes no large series, the results obtained closely approximated Hartmann's curves and led us to believe that the difference in the curves of older children and of the infants may be due to the variation in the age of the patients and perhaps to an unstable

blood sugar regulating mechanism of infants as compared to the more stable mechanism of the older child. McKittrick[10] in his work has pointed out that the blood sugar regulating apparatus of the newborn infant is not stable but that it becomes increasingly so during the first two weeks of life. This increasing stability may be adequate for the regulation of the blood sugar under normal conditions but inadequate under abnormal stimuli such as the insulin tolerance and glucose tolerance tests in infants less than 2 years of age. The variations in blood sugar values in a young infant are shown in Table I.

Because of the low blood sugar levels obtained during the insulin tolerance test, the test cannot be regarded as a means of definitely diagnosing a hypoglycemic syndrome in infants. It appears that the test may offer confirmatory evidence if the typical symptoms are produced during the test; however, the finding of a low curve in the insulin tolerance test does not prove or warrant a diagnosis of hypoglycemia based solely upon the results of the test. This may well be illustrated by two case histories.

CASE REPORTS

CASE 1.—No. 9079, a white male infant, 4 months of age, had repeated convulsions of the tonic type and one generalized clonic convulsion during the three weeks preceding admission to the hospital. No antecedent or concomitant illness was present, and the child was afebrile and presented no significant physical findings. The laboratory examinations of importance consisted of a fasting blood sugar of 43.5 mg. per cent by the Folin-Wu method using blood from a vein, a calcium value of 8.5 mg. per cent, a red blood cell count of 4 million with 80 per cent (10.1 Gm.) hemoglobin; serum proteins were normal in quantity and ratio, and the urine was not abnormal. A bromsulfphthalein test showed no dye retention thirty minutes after the dye was given intravenously. A glucose tolerance test was done both orally and intravenously with results which are shown in Fig. 5. An insulin tolerance test was then done using the usual method, and the results are shown in Table V and graphically in Fig. 6. The lowest point of the insulin tolerance test was 22.5 mg. per cent, and at that time the child had a generalized tonic convulsion of short duration which had been preceded by restlessness, hunger, and perspiration. No treatment was given, and the symptoms gradually disappeared. With this suggestive evidence of hypoglycemia as the basis of the convulsions, we were surprised greatly four hours later when the patient had a generalized convulsion at which time the blood sugar was 125 mg. per cent. This case illustrates that the insulin tolerance test cannot be used solely as a basis for diagnosis.

TABLE V

INSULIN TOLERANCE TESTS ON TWO ABNORMAL PATIENTS

AGE (MO.)	NO. OF PATIENT	FASTING	TIME IN MINUTES			
			20	40	60	120
4	9079	55.1	41.65	22.5*	41.0	41.0
24	V-918	71.0	62.5†	66.7	69.0	69.0

Blood sugar, mg. per cent, after injection of ¼ unit regular insulin per kilogram of body weight.

*Convulsion occurred

†Severe hypoglycemic symptoms

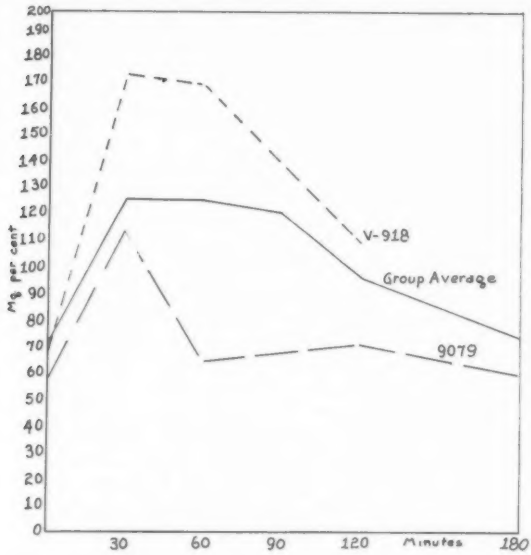

Fig. 5.—Comparison of the average curve of glucose tolerance tests on twelve normal and two abnormal infants less than 2 years of age.

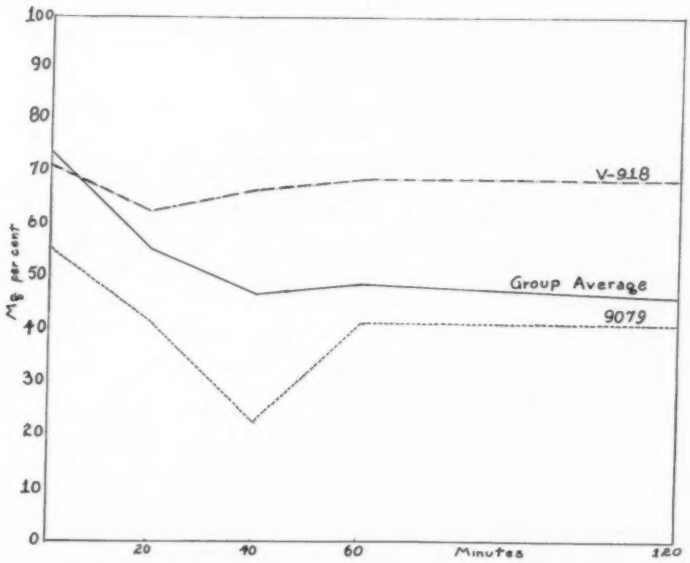

Fig. 6.—Comparison of the average curve of insulin tolerance tests on twenty-five normal and two abnormal infants less than 2 years of age.

CASE 2.—No. V-918 was a 2-year-old white male who was well until approximately 1 year of age at which time he had a sore throat. He was treated with sulfanilamide and made an uneventful recovery. Following this one illness, it was noted that the infant seemed to tire more easily. Ten months before admission, the boy was found one morning before breakfast to be excessively pale, and he soon lost consciousness which persisted for approximately one hour. No convulsions were present, and none have ever occurred. When he regained consciousness, he was somewhat stuporous for an hour or two after which he appeared to be entirely well. Two months after the first attack, the child became irritable and extremely drowsy but did not lose consciousness. A fasting blood sugar was determined by his private physician and found to be 50 mg. per cent. Because of this low value, the child was given sugar whenever he began to have an attack. During the past few months, these episodes have appeared two or three times each month. After eating sugar which his parents gave him, the child would promptly recover. Almost all attacks occurred in the morning before any food had been taken; the remainder of the attacks occurred near bedtime after an exceptionally active day. The past history of the patient is noncontributory. The usual laboratory tests gave no significant results. A glucose tolerance test was done and the results are presented graphically in Fig. 5 as with the first case reviewed. An insulin tolerance test was then carried out with the results presented in Table V and graphically in Fig. 6. The remarkable fact concerning the insulin tolerance test is that although this child's levels of blood sugar fell only slightly, he had a moderately severe reaction characterized by profuse cold perspiration, marked hunger, irritability, and drowsiness. At the completion of the test, the child greedily ate his food and within a few minutes the symptoms had disappeared and he was laughing, alert, and playing. Because the blood sugar levels fell so slightly yet the symptoms were marked, this case shows that the insulin tolerance test may not give significant results in a case of probable hypoglycemia. It is possible that repeated insulin tolerance tests might give a more typical curve. The child has been receiving a high protein-low carbohydrate diet for several months and has been entirely free of attacks.

Glucose tolerance tests were performed on twelve of the patients who had insulin tolerance tests. A great variation occurred with this test, and the average as well as the highest and lowest individual curves has been presented. Martin and Hellmuth[11] in a study of 404 patients who had hypoglycemia performed glucose tolerance tests on many of them and were led to conclude that there were seven main groups into which the types of curves could be divided with some significance. However, Conn[6] has proposed a preparatory diet to be used as a standard feeding preceding the test as a means of eliminating the variations which, in his opinion, are definitely related in many instances to the patient's diet before the test was performed. Since it is impossible to give a standard diet to infants of varying ages, variations of the type of curves are to be expected and the significance of the curves difficult to interpret. In this study, no one type of curve was found to be in the majority. The average curve shown in comparison with the lowest and highest individual curves in Fig. 4 is not the usual conception of a normal glucose tolerance curve. Thus it may be stated that a standard preparatory diet may eradicate many variations in the glucose tolerance test in adults, but as such a standard diet is difficult to establish in infants, the curves obtained are of doubtful significance as there is no single standard curve with which to compare abnormal results.

SUMMARY

Insulin tolerance tests were performed on twenty-five normal infants between 2 and 22 months of age, and the glucose tolerance test also was done on twelve of these infants in an effort to find a normal response with which curves from patients presenting a hypoglycemic syndrome might be compared for diagnostic purposes.

The study revealed that the fasting blood sugar values varied from 52 to 95 mg. per cent with an average value of 71.5 mg. per cent in thirty-seven determinations by a micromethod.

The glucose tolerance test was shown to exhibit great variations and therefore to be of little value in children below the age of 2 years.

The insulin tolerance test is safe and may be employed in young infants.

The curves obtained from the insulin tolerance tests were found to be much lower than published results of similar tests on older children.

Two cases were presented in which the insulin tolerance test would have led to erroneous conclusions.

The insulin tolerance test appears to be of value in diagnosing hypoglycemia or hyperinsulinism, but by itself it does not warrant a diagnosis of such conditions.

We wish to express our gratitude to Dr. S. R. Halpern and Dr. Gladys Fashena for their valuable assistance in the preparation of this paper.

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OBSERVATIONS ON THE MALFORMATION OF THE HEAD IN MONGOLOID DEFICIENCY

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I

ALTHOUGH mongolism has elicited extensive studies since Langdon J. Down, in 1866, called attention to this type of mental deficiency, our knowledge of this condition is still limited. Without going so far as a speaker of the Royal Society of Medicine a few years ago who is quoted by Penrose[1] as referring to our ignorance as a disgrace to the medical profession, it is true that mongolism is greatly neglected in spite of its extreme medical, economic, and social importance. This is the more surprising as other conditions of far less frequency, such as acromegaly, Addison's disease, and Simmonds' disease, have attracted a great deal of interest and are conditions about which knowledge is expected now of every active physician.

It might be useful to direct a few words to the name of "mongolism." Although the term seems well chosen as far as mongoloid children of the white race between the ages of 2 and 14 years are concerned, it is not well coined for mongoloid patients beyond puberty when the mongoloid appearance usually fades out, and the term does not apply either to mongoloid negroes or to mongoloid Chinese and Japanese children in whom the condition has been well recognized in recent years. The expressions "mongols" or "mongolians" are unfortunate since the terms refer to the race and not to the mongol "like" appearance. It is of more importance that the name "mongolism" is confusing if applied to the newborn mongoloid baby because only a small percentage of easily recognizable cases show the mongoloid features so typical in later years, while the majority are not recognized if the "mongoloid" appearance is the diagnostic standard. Many newborn mongoloid infants escape the attention of the medical profession on account of the fact that the appearance is not the typical one of later years.

Few investigations deal with the mongoloid infant at birth, and the fact that most investigators have studied cases of mongolism at a time when the condition was very marked has led to the conclusion that mongolism is a definite deviation from the norm like a monstrosity or a pathologic mutation but is not a disease. The statement in literature is not rare that mongolism is present or is not present and no gradations of mongolism are to be found. Recently, Fanconi[2] reiterated this idea by stating "there are no transitional forms between

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mongolism and the normal." It will be shown in this paper that mongolism is a fetal disease which occurs in many gradations and is not a malformation or a pathologic mutation of definite outline.

With regard to the frequency of mongoloid defectives, Bleyer,[3] in 1932, calculated the occurrence of mongolism on the basis of a study of almost 50,000 children in the outpatient department of the St. Louis Children's Hospital. Among these, 777 mentally deficient children were found, or approximately one mentally defective child in sixty dispensary cases. Among the mentally deficient there were 150 mongoloid idiots, which gives a percentage of 0.3 per cent of the total enrollment and 19.4 per cent of the mentally defectives. On account of these figures, one might expect at least 2.3 mongoloids among 1,000 newborn infants. As a matter of fact, this picture is too small because Bleyer has shown that among 30,000 children between the ages of 4 and 14 years, 45 mongoloid idiots occurred; but among 20,000 admitted in the first three years of life, 70 mongoloids occurred. Hence, in the younger group one mongoloid appeared in about 285 dispensary children. By calculating the number of mongoloid children in the United States, Bleyer estimated that at least 28,000 live here at the present time. This number indicates impressively the importance of this condition, and the fact that among every thousand newborn babies two or three mongoloids may be found shows the great toll which this disease takes from the health of the population. The calculated percentage appears to be correct for all the countries of the white race, as various publications from different places demonstrate. Lahdensuu[4] recently reviewed the frequency of mongolism in Finland. He encountered 40 mongoloids among 8,517 patients from the University Children's Hospital, Helsinki, during the time from 1925 to 1936; this gives a percentage of 0.47 per cent. Hellsten[5] figured 0.63 per cent mongoloids from statistics in the Children's Hospital of the University at Lund. Gallo[6] found in Italy among a studied group of 34,494 children, 94 mongoloids, which represents a percentage of 0.27 per cent. As far as the proportion between the mongoloid patient and the other groups of mental deficiency is concerned, the calculations are not uniform, because some investigators used statistics from institutions for the mentally deficient, while others calculated the percentage from outpatient material. From the many different statistics, however, it appears definite that mongolism participates with 6 to 10 per cent in the production of mental deficiency.

As I pointed out previously, mongolism is easily recognizable in the age group from 2 to 15 years, and the striking appearance of these patients enables the expert to establish the diagnosis without hesitation. There is, however, a definite lack of diagnostic signs which would decide the question in doubtful borderline cases. The main stigmas are epicanthal folds, slanting palpebral fissures, fissured lips and tongue, short hands with curved little fingers, short feet with a gap between

the big toe and second toe, stout figure and hypotony, strabismus, deep voice, and a rather typical psychologic behavior, but it is generally agreed that in many cases a part of these symptoms only is present. It always appeared to me extremely unsatisfactory to use epicanthus and slanting eyes for the establishing of the diagnosis, since both stigmas are not pathognomonic and are less frequent than one would expect them to be.

The tabulation of the signs of mongolism does not indicate any relationship of the symptoms to each other. The description looks like the accumulation of various stigmas linked together by chance, but one does not conceive which pathologic process may produce such a variety of unfortunate imperfections. Admitted that mongolism is a physical deviation which defaces the unlucky person stamped with this condition, why is mongolism of such a serious importance that the child is doomed to idiocy or imbecility? It is obvious that the collection of physical stigmas does not suggest the character of the disease which is apt to exercise such an influence upon the growing individual. It has been the purpose of an extensive study of 300 mongoloids and the material of 31 autopsies to elicit the characteristic disorder of this disease. It has been the main goal to understand the basic factors which act upon members of different races and families to produce so similar and unfortunate an effect on familial variations. After years of measuring and comparative studies of the skeletal features of mongoloid children, it became evident to me that the so-called "mongoloid" appearance depends upon a growth disorder of the skull which is invariably encountered in every mongoloid child. The mongoloid skull, including the facial bones, deviates from the normal in its proportions, and it is this malproportion of the skull that is likely to decide the diagnosis in doubtful cases. Of course, not only the skull is affected in mongolism; this condition is a general growth disorder which involves the whole skeleton, and this fact is a cornerstone in the understanding of the pathology. My observations of the skull in mongolism are based on clinical observations, on radiographic studies, and on twenty cases in which I performed the autopsy. I was not able to study macerated skulls of mongoloids. This lack, however, is compensated by an excellent paper by Greig.[7] Greig offers a scrutinizing study of the skulls of three mongoloid patients aged 16, 14, and 5 years, respectively. Van der Scheer[8] also referred in his book to the shape of the mongoloid skull, and his pictures are used for comparison.

An understanding of the growth disorder of the mongoloid skull will be best reached by comparing it with a normal skull in its development from birth to adult life. To a great extent, anatomists have dwelled upon the changes of the normal skull which occur during the period of development and which are persistent in spite of the encountered variations of familial and racial appearance. In studying skulls, one should always place the specimen in such a position that the so-called

"base line" or Frankfurter horizontal (a line which runs through the inferior margin of the orbit hole and the superior margin of the external auditory meatus) is in a horizontal position. A perpendicular line is drawn through the alveolar process in front of the face. The skull of the newborn infant differs from that of the adult in several points, and it may be useful to mention a few measurements and proportions which are of importance for the understanding of normal development as well as of the mongoloid growth disorder. Most outstanding in the newborn

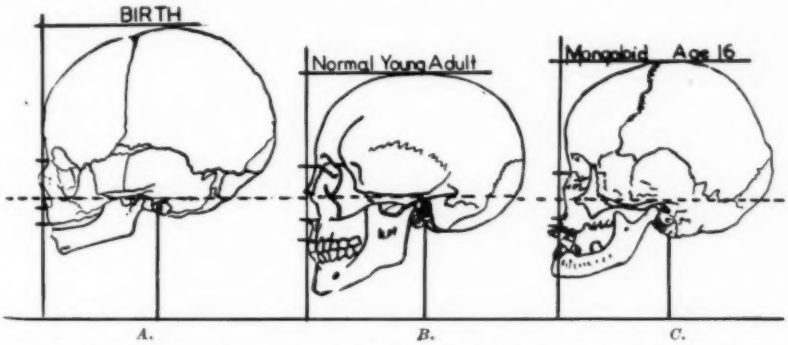


Fig. 1.—The proportions of the skull (*A*) at birth, (*B*) in a young adult, and (*C*) in a mongoloid. Note the large brain cavity and the small face at birth. The distance from the bregma to the nasal root measures twice the length from the nasal root to the alveolar crest. Note the short distance from the nasal spine and the inferior orbit margin to the alveolar crest. Note shape of infantile mandible. The transverse axis of the atlanto-occipital joint is in the middle of the base line.

The outstanding feature in the young adult is the increase in size of the facial bones. The lower margin of the orbit hole is far apart from the alveolar crest. The mandible shows angulation.

The mongoloid skull preserves the fetal proportions although there is some increase in size noticeable. The face remains small. The nasion and maxilla are underdeveloped and the mandible shows fetal shape. The transverse axis of the atlanto-occipital joint is still in the middle of the base line, or sometimes even nearer to the front line.

skull is the large brain cavity and the small face. Average length, measured from the glabella to the occipital point, is 11.5 to 12 cm.; average parietal width (bip.), 9.5 cm. The circumference of the skull is 34 cm., or 13.5 inches. In studying the proportions of the face, it is noteworthy that the vertical distance from the vertex to the nasion is twice as large as that from the latter to the alveolar point. The orbital holes appear disproportionately large in the newborn infant and in comparing the height of the orbital hole with the distance from the lower orbital margin to the alveolar crest, one will recognize that the latter distance measures less than the orbital height. The distance from the anterior nasal spine (acanthion) to the alveolar point (prosthion) is short but large enough to provide adequate berth for the developing upper teeth. A last item of interest is the position of the transverse axis of the atlanto-occipital joint. According to Froriep,[9] in the newborn infant it is in the middle of the base line, the proportion between the anterior and posterior sections being 3:3. Growth of the skull base displaces the site of the atlanto-occipital joint backward.

The proportion in a 10-year-old child is about 4:3, and in adult life, 5:3. The development of the musculature of the neck counteracts the nodding of the head forward in upright position which takes place if man falls asleep. In the child the head is balanced. During the extensive growth which is going on in the first year of life, the circumference of the skull increases 3 to 4 inches, or 10 cm., the circumference of the head at one year being 42 to 44 cm. In the fifth year of life, the circumference usually reaches 50 cm., or 20 inches. These measurements are of importance because during infancy the skull bones are thin and the sinus system not yet developed. The circumference offers, therefore, a fair estimate of the brain cavity and the size of the growing brain. The increase of the size of the skull is produced by growth of the skull base in the lines of the cartilaginous and membranous synchondroses[10] and by osteous proliferation about the margins of the flat skull bones, the sutures acting like the epiphyseal lines of the long bones. Even more impressive than the increase of the brain cavity is the growth of the facial bones in postnatal life. The distance from the nasal spine to the alveolar crest increases rapidly; the lower orbit margin moves farther and farther apart from the alveolar crest, while the orbit holes gain very little in size. In the adult skull, the distance from the nasion to the alveolar point is equal to the height of the forehead. The mandible increases in size and the mandibular angulation becomes more marked.

Comparison of the mongoloid skull with the normal development demonstrates impressively the failure of an adequate growth of the mongoloid skull. To talk about "the" mongoloid skull is justified by considering the striking resemblance in all of them. Greig[7] points out: "How closely alike these skulls are to each other, superimposition of their outlines conclusively demonstrates whether the orientation be lateral or facial. Nor is there any reason to believe that increased age would have altered their main characteristic." This is well demonstrated by Greig, who superimposes the outlines of three mongoloid skulls. In Fig. 1 I outlined one mongoloid skull which demonstrates well the whole pathology. The transverse axis of the atlanto-occipital joint is still in the middle of the base line in spite of the notorious brachycephaly of the mongoloid skull. This is due to the extreme shortness of the skull basis in mongolism to which I called attention in a previous paper.[10] A second factor is the failure of growth of the maxilla and the nasal portion. The proportion between forehead and face is still fetal. The deficiency of development of the maxilla places the lower margin of the orbit near the alveolar crest and the distance from the nasal spine to the alveolar point is as short as in a normal newborn baby. The incisor teeth have no space for their roots and protrude. The angulation of the mandible is flat and definitely fetal in shape, but its outline is somewhat confused by the fact that the mental process is protruding and the anterior branch is bent. This feature appears

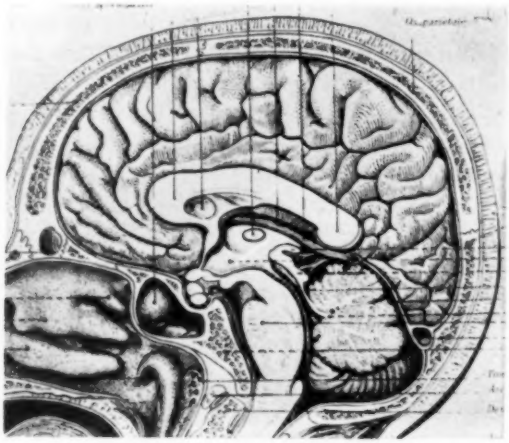
to me to be due to the fact that on account of the underdevelopment of the maxilla and the teeth, the mandible does not find the normal counteraction. The strong muscle pull bends the anterior rami of the mandible upward.

In summarizing the abnormality of the facial development of the mongoloid skull, it appears striking that the mongoloid skull is deficient in growth of all those structures which show the most marked development after birth, the nasal bone, ethmoid, and maxilla, which fail to grow, resulting in a persistence of fetal proportions of the face. The outline of the mandible is sometimes confused in later life through the protrusion of the teeth, and prognathism occurs due to muscle traction of the masticatory apparatus, but these secondary changes do not influence the essential feature of mongolism, which consists in the failure of development of the protruding structures, the summits of the face ("acromieria," *akros* = apex, tip, summit). The micrognathic deficiency is only a part of the picture. The skull basis remains short on account of the insufficient growth of the synchondroses spheno-occipitalis and spheno-ethmoidalis. Another factor which contributes to the shortness of the skull base is the absence of development of the frontal and sphenoid sinuses. A brief glance over the picture of a transverse section through the normal skull reveals how definitely the sinus expansion influences the skull shape. By eliminating the sinus system from the skull, one obtains the true outline of a sagittal section through the mongoloid skull (Fig. 2). Another factor is the failure of the flat skull bones to produce sufficient growth at the bone margins. This failure is indicated clinically by the slow closure of the fontanels, which remain patent for several years. It is also indicated by the remainder of sutures which disappear normally shortly after birth (frontal suture and sagittal suture) and the creviced sutures at the skull basis which were found by Greig. A last item, worth mentioning, is the thinness of the flat skull bones due to failure of diploe development. In my autopsy material, the skull bones measured 3 to 4 mm. only instead of 6 to 10 mm. except in a few cases in which marked brain atrophy had increased internal bone proliferation. The mongoloid skull is extremely light, and the skull bones are sometimes paper thin with irregular foramina where ossification is wanting. Table I shows a comparison of four mongoloid skulls with those of four mentally deficient children who corresponded in age and in skull circumference to the mongoloids.

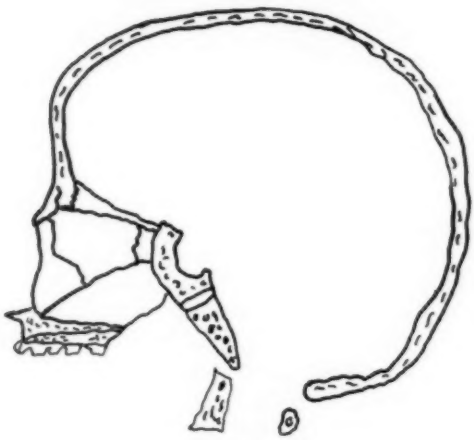
TABLE I

MONGOLOIDS			UNDETERMINED IDIOTS		
AGE	HEAD CIRCUM. (CM.)	CALVARIUM WEIGHT (GM.)	AGE	HEAD CIRCUM. (CM.)	CALVARIUM WEIGHT (GM.)
8 yrs. 7 mo.	47.0	184	8 yrs. 9 mo.	51.0	290
12 yrs.	48.0	66	12 yrs.	48.5	280
15 yrs.	49.5	250	16 yrs.	43.0	330
20 yrs. 6 mo.	50.8	230	17 yrs.	52.0	320

It is obvious that the mongoloid calvarium is definitely lighter than that of the control cases. Most outstanding is a weight of 66 Gm. of the calvarium of a mongoloid girl, aged 12 years. But even by ignoring such an extreme value, the tendency of the skull weight is obvious.



2A.



2B.

Fig. 2.—*A*. Sagittal section through skull and brain indicating the position of the frontal and sphenoid sinuses and the situation of the brain within the skull cavity. Note the size of the sphenoid body, the angulation with the clivus, and the large sphenoid sinus. Note the frontal sinus and the development of the diploe.

B. Diagram of a mongoloid skull drawn on the same scale as *A*. The sphenoid body is in upright position, the sinus absent. The cribriform plate is at a higher level than in the normal skull. Note retraction of nasion due to absence of frontal sinus and absence of diploe extension. The maxilla is undersized.

C. Sagittal section through brain of a 9-year-old mongoloid girl. Note the influence of the skull deformity upon the shape of the brain. The corpus callosum is compressed in anteroposterior direction with kinking of the splenium and another kink in the corpus. The third ventricle is elongated and the thalamus shows fusion with opposite side. Note the large flattening of the thalamus where the section has separated it from the opposite side. The brain stem is elongated. The cerebellum is displaced downward and pushed into the foramen magnum.

Greig offers a few measurements which also impressively demonstrate the facts above presented.

If three mongoloid skulls are compared with three microcephalic skulls of approximately the same age, the difference is outstanding.

2C.

TABLE II

	MONGOLOID	MICROCEPHALIC
Circumference (cm.)	44.40	37.50
Ophryo-mental length (mm.)	96.00	117.00
Ophryo-alveolar length (mm.)	68.00	85.00
Superior facial index	69.92	86.42
Cranial capacity (c.c.)	982.00	543.00
Weight of skull (Gm.)	316.57	311.85

Although the circumference of the three mongoloid skulls averaged 44.4 against 37.5 cm. of the microcephalic patients, and the cranial capacity was 982 against 543, the three mongoloid skulls had almost exactly the same weight (316.57 to 311.85 Gm.). Measuring of the ophryo-alveolar length (distance from point between eyebrows to alveolar point) and of the superior facial index ($\frac{\text{ophryo-alveolar length} \times 100}{\text{bizygomatic width}}$) illustrates the failure of facial growth of mongoloids in contrast to the facial development of microcephalic patients.

From these studies, it is obvious that mongolism represents a specific growth disorder in which all those structures are involved which grow markedly shortly before and after birth. In a condition which represents the opposite of mongolism, namely acromegaly, the same structures react especially to the abnormal growth stimulation. It is well known that in the latter condition the whole skeleton does not grow indiscriminately. In the skull, for instance, most outstanding is the increased pneumatiza-

tion which leads to extension of the sinus system. The mandible grows by osseous deposits upon the mental process. In the flat skull bones, the diploe is chiefly involved. On the skull basis, the cartilaginous sutures react especially by renewed proliferative activity of the cartilaginous disks. Mongolism is associated with a deficiency of cartilage proliferation, diploe development, extension of the sinus system, and osseous proliferation about the skull sutures and the protruding parts of the face.

I dealt extensively with the skull in mongolism, because it is the skull deviation which gives rise to the peculiar appearance of these patients. The deficiency, however, is not restricted to the skull. It has been well recognized in the literature that a distinguishing feature of mongolism is the hand. Clinically, the stout, short and broad fingers and the curvature of the little finger form an important diagnostic item. It is the curvature of the little finger which attracted most interest. Recently Hefke[11] gave a brief review of the literature on this subject and presented x-ray observations on 100 mongoloid patients. He found a curvature of the little finger in 62 per cent. In my own study of 36 cases in which x-ray pictures of the hands were taken, only 13, or 36.2 per cent, showed the curvature of the little finger while 23, or 63.8 per cent, had a normal second phalanx. Muir found the incurved little finger in 12 of 26 cases present. The anomaly of the second phalanx is apparently a part of the prenatal growth disorder because the incidence of incurvature of the little finger does not increase with age in my studies. Of ten mongoloid babies under 12 months of age, four had the abnormal second phalanx. Moreover, in one case of syndactyly, the abnormality of the second phalanx was also present in the index finger. In all cases of mongolism with striking abnormalities of the little finger, the thumb is also pathologic.

With regard to the postnatal growth of the hands, Hefke noticed that the mongoloid hand is from 10 to 30 per cent shorter than normal hands. I measured the length of the end phalanx of the fourth finger and the length of the first phalanx of the same finger in twenty-eight x-ray pictures. The measurements are given in Fig. 4. In the first column, the length of the end phalanx is represented. The black columns indicate the length of the first phalanx of different cases, each having the same length of the third phalanx indicated in the first column. In this way, it became obvious that the first phalanx is relatively shorter than expected. The proportion $\frac{\text{length of first phalanx}}{\text{length of third phalanx}}$ was below 2 in 7 cases with an average of 1.64; it was between 2 and 3 in 18 cases with an average of 2.43. In two cases, the proportion of 3 was found, and in one case, the proportion of 4.1 was found. In normal x-rays the proportion is 2.5 to 3. We may conclude that those structures

which are expected to increase mostly in size are impaired to the greatest extent, and since the metacarpal bones and the first phalanges have to grow more extensively than the third phalanx, the shortness of those bones is more striking than that of the latter. There is, however, an absolute shortening of all three phalanges, and the thinness of the distal phalanx is an important item which does not appear in the measurement of the length.

Fig. 3.—Hand of a 3-year-old mongoloid boy. Note characteristic rudimentary second phalanx of little finger and rudimentary second phalanx of index finger, and syndactyly between third and fourth fingers. Note smallness of phalanges toward their distal ends.

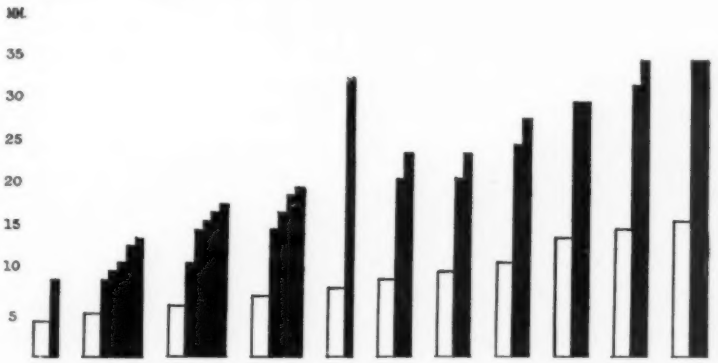


Fig. 4.—The white columns indicate the length of the third phalanx found in twenty-eight patients with mongolism aged from a few months after birth to adult life. The black columns represent the length of the first phalanx of the same finger. Each column represents one case, showing the varying lengths of the first phalanx combined with the given length of the third phalanx.

It has been suggested by some authors that the deficiency of the mongoloid skull depends upon the brain deficiency because the failure of the brain growth does not call for increase of the size of the skull cavity. A comparison between the mongoloid skull and the microcephalic skull in which growth of the facial parts is not delayed and the observations on the skeletal growth which I presented above prove that the acromicry of mongolism does not depend upon an inferiority of the brain but represents a specific deficiency of the growth factor.

II

The first part of the investigation dealt with the postnatal development of the mongoloid patient, and evidence is accumulated that the postnatal mongoloid disorder represents a deficiency of those factors which are generally related to the function of the anterior pituitary. Mongolism, however, is present at birth, and the observations above presented do not explain what happened during the fetal life. What is mongolism at birth? If mongolism is a kind of general "fetalism," what is the difference between a newborn mongoloid and a premature baby of 7 months? If mongolism is merely a delay or absence of normal growth, why do not all premature babies look "mongoloid," at least for a transitory period? These are indeed questions of interest, and an analysis of the mongoloid features at birth and shortly after birth seems desirable. The mongoloid skull at birth has not yet a definitely brachycephalic shape, but the fronto-occipital diameter (normally 11.5 to 12 cm.) appears somewhat shortened, though not in all cases. The width of the skull (biparietal diameter normally 9.5 cm.) is normal or slightly subnormal; the circumference of the skull is, therefore, within normal range but below average (34 cm., or 13½ in.). Four mongoloid skulls which I had the opportunity to measure within the first two weeks after birth had a circumference of 34 cm. Lahdensuu presents measurements of eleven mongoloid babies who were observed within the first five days after birth.

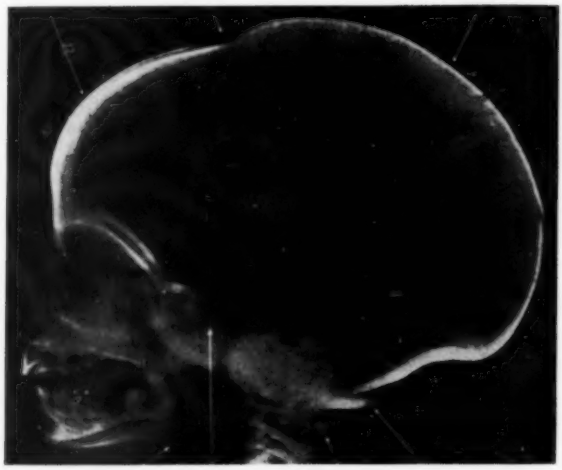
TABLE III

	FO CM.	BIP. CM.	CIRCUM. CM.	INDEX
Boys				
1	11.5	9.0	34.0	78.3
2	11.0	8.4	33.0	76.6
3	10.9	9.4	33.0	86.3
4	10.6	9.3	33.0	87.7
Girls				
1	10.1	8.5	33.5	84.2
2	10.5	9.0	33.5	85.7
3	10.6	8.6	32.0	81.1
4	11.9	9.7	35.2	81.5
5	11.6	8.5	34.0	73.3
6	10.4	8.6	32.0	82.7
7	11.4	9.4	34.0	82.5

There were only two girls out of eleven patients who had a skull length above 11.5 cm. One boy had a skull length of 11.5 cm., but all the other patients were below the average, some of them definitely below the normal range. In most cases, the biparietal diameter was small. In one case only, that with the largest length, the diameter was past the average of 9.5 cm. In previous papers,[10, 10a] I published measurements of several mongoloids during the first half year after birth, and those measurements indicated that the skull of the mongoloid infant does not grow in the first few months. This is due to the absence of growth of the skull base. The brain, however, increases in size, and as a compensatory measure, the parietal and temporal parts protrude, producing a "rounding out" of the mongoloid skull which is sometimes so marked that length and width of the skull are equal. At birth the most outstanding peculiarity of the mongoloid child is the face. The bridge of the nose is flat and sunken. Craniologic studies (Van der Scheer and Greig) and x-ray studies indicate that the nasion is absent or underdeveloped. The flatness of the nose bridge accentuates the epicanthal folds, and Siegrist has pointed out that normal babies born with a rather flat nose bridge are likely to show at birth an epicanthus which disappears a few months later if the nose bridge is better developed. Although the nasion is rather small in every newborn baby, the mongoloid shows such an obvious underdevelopment of the root of the nose that this is the most conspicuous sign. Another item is the malproportion of the facial development. The distance between acanthion (anterior nasal spine) and prosthion (alveolar point) is so short that there is only a small crest between the lower border of the nasal cavity and the alveolar edge. The vertical diameter of the orbit holes is definitely larger than the distance from the lower orbit margin to the alveolar crest.

Earlier investigators have placed too much emphasis upon an x-ray study of the sella turcica. The outline of the sella is, however, not abnormal in mongolism (Gordon and Bell[12] and Benda[10a]). But in turning attention to the proportions and the angulation of the skull base and face, x-ray pictures of the mongoloid skull are of indispensable value for the diagnosis in doubtful cases and for an understanding of the anatomy. One x-ray picture will demonstrate the essential items better than the description of many skulls (Fig 4). It is obvious that the sphenoid body is smaller than normal and that its position is more upright. The distance from the anterior clinoid process is to the acanthion is shorter than normal, and the plane of the cribriform plate is displaced to a higher level. Most remarkable is the smallness of the maxilla. The nasal spine is close to the alveolar ridge and the palate appears on the same level as the sella instead of being on the same plane with the skull base. The axis of the atlanto-occipital joint is nearer to the face line than to the occiput, indicating the smallness of the bones forming the skull basis and the facial scaffolding.

Another item, accentuating the deficiency of proliferative bone growth, is the condition of the skull sutures. It is known that in mongolism the fontanels are unusually large and unite after great delay. It has, however, not yet been noticed that all sutures may be separated and



A.

B.

Fig. 5.—*A.* Lateral view of full-term fetus. Note size and situation of sphenoid body and level of cribriform plate. Note the development of nasion and maxilla. (From Cunningham: *Text-Book of Anatomy*, ed. 7, New York, 1937, Oxford University Press.)

B. X-ray of 5-week-old mongoloid baby representing four similar cases of same age group. Note backward displacement of sphenoid body and level of cribriform with retraction of nasion and smallness of maxilla. The alveolar crest is at the level of the posterior clinoid process instead of the skull basis.

that in palpating the skull bones one may find that the sagittal suture is not in approximation and the parietal bones are separated ½ cm. or more. The frontal suture which disappears normally within a few days after birth may be palpated down to the nasion even several months after birth. The same delay is recognizable about the lateral fontanel and those sutures which cross the sides of the skull. That this delay or absence of union of sutures may last throughout childhood is shown in Greig's three skulls which showed incomplete union of sutures, defects of ossification, and persistent crevices. Normal growth of the flat skull bones proceeds in proliferative ossification at the margins from one or more centers of ossification. The delay of closure of the fontanels and the open sutures are due to the insufficiency of growth at the margins of the flat bones. These new observations on the skull sutures add evidence to the theory of a deficiency of the growth factor.

There are a few more signs which are of value for the diagnosis and which, in my opinion, are caused by the same factors. The skin may be extremely wrinkled at the wrists and ankles and occasionally at the neck. The skin envelope appears too large for the skeleton which did not keep up to the growth rate of the skin. The same is true for the tongue which may markedly protrude in mongoloid children in later years. The tongue is not too big but the palate is too small for the tongue. It is certain now that the alterations of the tongue in mongolism are secondary changes due to the smallness of the mouth and to abnormal suction (Thomson).

I may summarize that the mongoloid at birth is an infant who suffered from a deficiency of skeletal growth before birth. The prenatal deficiency involves the same structures which are affected in the postnatal period. The deficiency is a "hypomorphy" (Davenport) with a well-defined pathology in which the growth of the distal parts is foremost involved, giving rise to what I may comprise in the term of "acromiery." The difference between a mongoloid and a normal premature baby is that the latter is proportionate in its features corresponding to the stage of development which it has reached at the time of birth. The mongoloid is not proportionate; it shows a "rounding" of the features because of delay of distal growth. The skull, the hands, the feet, the whole body repeat the same type of abnormality which is due to the fact that the centers of growth are well laid out but the growth slows down toward the periphery and gets arrested.

There is evidence from clinical and experimental observations that the type of pathology seen in mongolism depends upon the lack of specific growth factors. Although these factors are not yet chemically isolated, the production seems to depend upon the pituitary anterior lobe. Experimental hypophysectomy as well as feeding with the pituitary hormones and studies in acromegaly has advanced knowledge of the growth factors and has led to isolation of at least three main actions of the pituitary anterior body: the thyrotropic, the gonadotropic, and

the chondrotropic "hormones." If the theory that the pituitary growth factor is insufficient in mongolism is correct, one may expect pathology of the thyroid, the gonads, and all those structures whose growth depends upon the action of the anterior pituitary lobe. An analysis of the pathology of mongolism will be presented in another paper.

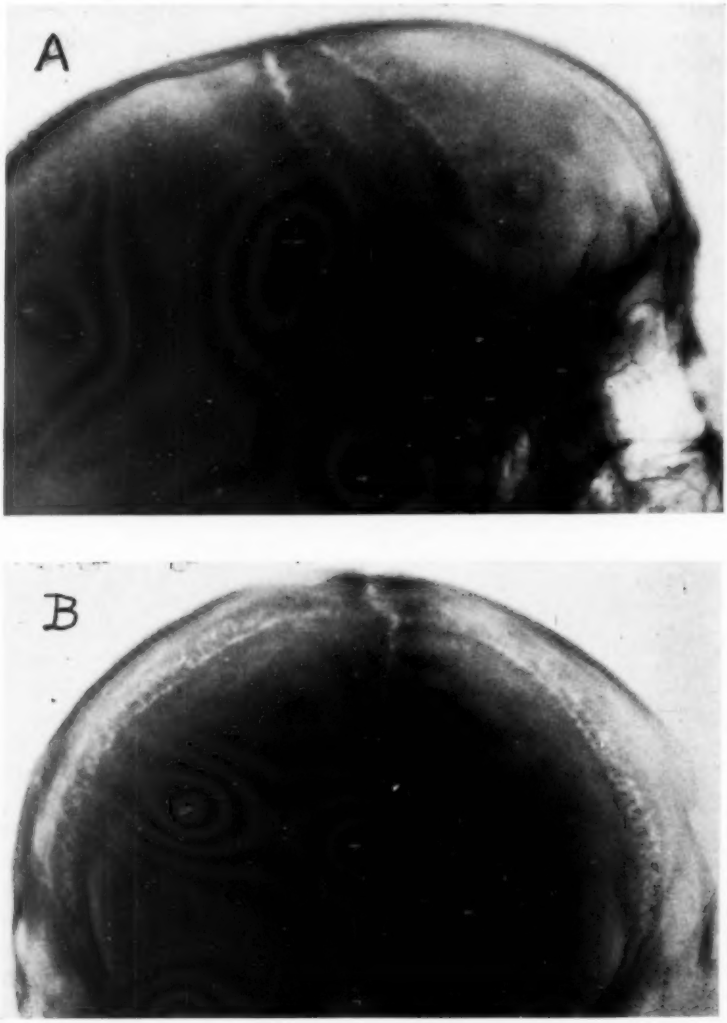


Fig. 6.—*A*. Radiograph of skull of 15-year-old mongoloid boy. Note the preservation of original dentation of sutures and lack of ossification. Note shape of sphenoid body. There is a small sinus present but angulation is wanting. The frontal sinus is missing. The flat bones are paper-thin. No diploe development.

B. Skull of a 9-year-old mongoloid boy. Same condition of sutures as in *A*. Metopic frontal suture. Note thinness of skull bones.

SUMMARY

According to various statistics in different countries, it is estimated that about 2.3 instances of mongolism occur among 1,000 births. Mongolism participates in the production of mental deficiency in about 10 per cent.

An analysis of the factors which produce the peculiar appearance of these patients reveals that the characteristic feature of this condition is due to an abnormal development of the skull. The sphenoid body does not form the normal angulation with the clivus; it is either in an upright position or even slightly bent backward. The plane of the anterior skull cavity is steeper than normal. The cribriform plate is shorter and is placed at a higher level than normally. The nasion is retracted. The growth of the facial bones is diminished. The maxilla body and the mandible are underdeveloped. The development of the sphenoid sinus and of the frontal sinus is either entirely wanting or the appearance of the sinus is delayed and its size is small. The flat skull bones remain paper-thin due to absence of diploe extension. The skull sutures remain permanently separated by fibrous tissue or their ossification is delayed due to the absence of bone proliferation at the margin of the flat skull bones. The closure of the fontanels is delayed for the same reason. The facial development, especially that of the prominent parts of the face, is markedly diminished (acromicry).

An analysis of the growth of the skeleton reveals that the same disorder which is characteristic of the skull affects the whole skeleton. The hand bones are shorter than normal due to a reduced growth rate of the metacarpal bones and the phalanges. Those structures of the hand which increase most extensively in size during life are most severely involved. X-rays of the hand bones indicate smallness and underdevelopment of the distal parts.

Measurements of the heads of mongoloid babies indicate that the skull of patients with mongolism is slightly undersized at birth. X-ray studies reveal a characteristic deformity of the skull basis and an underdevelopment of the facial structures. An item which has not yet attracted attention is the delay of development of the flat skull bones. The adjacent margins of the bones of the brain case are separated by wide fibrous septa which fail to disappear in time. Metopic sutures are almost invariably found in mongoloids. The observations suggest a deficiency of the growth factor. Anomalies of the hand bones and of the long bones indicate involvement of the whole skeleton. It is evident that the congenital acromicry is independent of the brain of the mongoloid child. Its source has to be sought in agents which are essential during the gestation period and which are apparently connected with the hormonal blood supply.

In order to provide a name for the mongoloid deficiency which encompass an understanding of the essential feature of this disorder and

which permits a broader application to all races, including the Chinese, Japanese, Indian, and negro patients, the term "congenital acromicria" is proposed.

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NONHEMOLYTIC FAMILIAL JAUNDICE

Report of a Family

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RECENTLY Dameshek and Singer[1] reported two families having "constitutional hepatic dysfunction with indirect van den Bergh reaction." Although the presence of familial jaundice without the usual manifestations of increased hemolysis had been suspected since the early part of this century, their report contained the first comprehensive description of this condition. In the jaundiced individuals formerly studied by Gilbert[2] and others[3, 4] mild hemolysis of the red blood cells was not adequately ruled out.

Nonhemolytic familial jaundice is chronic and is usually unaccompanied by other symptoms. It probably does not affect the life span. There is no splenomegaly or demonstrable liver disease. Resistance of the red blood cells to dilutions of saline is normal, and reticulocytosis occurs at a normal rate. The urine is free of bilirubin, and the urobilinogen content of the feces is normal or slightly decreased. There is no anemia or spherocytosis. Finally, bilirubinemia of the "indirect" type is found to be present.

During the past year we observed two children with a familial jaundice that falls within this classification. Despite the fact that it was impossible to investigate the entire family because of their scattered habitation, enough evidence was secured, we believe, to report this family as one demonstrating nonhemolytic familial jaundice.

The "M" Family.—Both the mother and father are of pure Irish origin. The father, who has never been jaundiced, came to America at an early age, and he knows very little of his ten siblings. His mother has had definite jaundice "all her life," and is still living at the age of 70 years in Ireland. A brother who immigrated at the same time as the father is said to be frankly "yellow" in skin and eye color. He has no children.

There have been four children in the "M" family. The firstborn, a male, was jaundiced from birth until he died at the age of 6 weeks, following an operation for pyloric stenosis. Helen, the oldest living child, aged 6 years, has never shown jaundice. Katherine, aged 5 years, has been jaundiced constantly since the eighth day of life, with the possible exception of a week or ten days when she had measles. William, aged 7 months, became jaundiced on the fifth day of life and has remained so since.

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CASE REPORTS

William M. was delivered by cesarean section at Bellevue Hospital on Nov. 9, 1940. He weighed 9 pounds, 10 ounces (4.37 kg.), was 21 in. (52.5 cm.) in length, and appeared normal at birth. On the fifth day moderate jaundice was observed. This became more intense during the fifteen days that the child remained in the nursery. Meanwhile, he ate well and appeared vigorous. All stools were normal in size, consistency, and color. He weighed 9 pounds, 6 ounces (4.26 kg.) on discharge.

Laboratory Findings on First Admission.—The blood Wassermann was negative. The blood count showed no anemia, and the red blood cells appeared normal in shape and size. Reticulocytes numbered 1 per cent. Clotting time was ten minutes (Lee and White test tube method). Fragility test showed beginning hemolysis at 0.38 per cent with completion at 0.28 per cent for the patient, and 0.38 per cent to 0.28 per cent for a normal control.

On Feb. 20, 1941, William, at the age of 3 months, was readmitted to the Children's Medical Service because of a cough of five days' duration. He had been well since leaving the nursery and had been fed nothing but breast milk with complements of cod-liver oil and ascorbic acid. Stools had been normal while at home. His jaundice had been constantly present. His weight on admission was 15 pounds, 6 ounces (7 kg.). Physical examination revealed a plump, well-developed, active infant with moderate jaundice of skin, sclerae, and mucous membranes. The liver was felt just below the costal cage in the right midclavicular line. The spleen was never palpable. There were signs of a nasopharyngitis and catarrhal otitis media. These signs cleared slowly, and he was kept on the ward for eight days while blood studies were done. During this time all stools were examined and they were consistently normal in appearance.

Laboratory Findings on Second Admission.—On admission the white blood cell count was 16,350, with polymorphonuclears, 28 per cent; bands, 6 per cent; lymphocytes 58 per cent; and monocytes, 8 per cent. Red blood cells were 4,700,000; hemoglobin, 11.7 Gm. (Newcomer). The hematocrit was 43 per cent, giving a mean corpuscular volume of 91 cu. micra. The mean corpuscular diameter was 7.4 micra. Smears showed no reticulocytes or spherocytes. There was no sickling in incubated specimens. The platelet count was 100,000, and the sedimentation rate was 14 mm. in one hour (Wintrobe, corrected). The serum calcium was 10 mg. per 100 c.c.; serum phosphorus, 4.1; serum phosphatase, 7.9 units in one hour; serum cholesterol, 183. The icteric index was 38, and the van den Bergh gave an indirect reaction. Gastric analysis showed free hydrochloric acid in normal amounts in the fasting gastric contents. Duodenal drainage revealed bile by the nitric acid test. The bleeding time, by finger puncture method, was one minute, fifteen seconds, and the clotting time, by the capillary method, was three minutes, thirty seconds. The fragility test showed hemolysis from 0.40 per cent to 0.28 per cent.

On the fifth hospital day the icteric index was 40, and the van den Bergh reaction was indirect. Repeated urine examinations were negative for bile and bilirubin. Further blood examination never revealed over one per cent reticulocytes. The fragility test was repeated with hemolysis from 0.40 per cent to 0.28 per cent. On the eighth hospital day the icteric index was still 40 and the van den Bergh reaction indirect.

After discharge the infant was seen frequently in the outpatient department until July, 1941. He developed normally and at the age of 7 months weighed 20 pounds, 8 ounces (9.31 kg.) and was 28½ in. (72.3 cm.) in length. Moderate jaundice persisted. Never was his spleen palpable, and the liver was never felt more than 2 to 3 cm. below the rib margin in the right midclavicular line.

On June 10, when the infant was aged seven months, the icteric index was 22, and the van den Bergh reaction was indirect. Fragility of red blood cells showed beginning hemolysis at 0.44 per cent with completion at 0.28 per cent for the patient, and 0.42 per cent to 0.28 per cent for a normal control. The mercuric chloride reaction of Takata and Ara[5] was negative. The formol-gel[6] and Hanger[7] tests were negative. The Weltmann[8] test showed flocculation in the first two tubes, a shift to the left.

Katherine M. was seen several times in the clinic. She is a well-nourished, alert girl of 5 years of age, weighs 40 pounds (18.18 kg.), and is 42½ in. (107.8 cm.) in height. Except for moderate jaundice of skin and sclerae, she appears physically normal. Her mother feels that she is more susceptible to respiratory infections than her nonjaundiced sister of 6 years of age. She was acutely ill with measles and has had pneumonia. (During the fever which accompanied measles in her fifth year, her jaundice was said to have cleared almost entirely.) Her stools have always been normal in color. Her icteric index at the time of William's admission to the hospital was 25, and her van den Bergh reaction was indirect. Her fragility test showed hemolysis from 0.40 per cent to 0.28 per cent.

On June 17, aged 5 years, her white blood cell count was 7,500, with polymorphonuclears, 31 per cent; lymphocytes, 60 per cent; monocytes, 7 per cent; eosinophiles, 2 per cent. Red blood cells were 4,820,000, with 12.2 Gm. of hemoglobin. The hematocrit was 40 per cent, with a mean corpuscular volume of 83 cu. micra. The mean corpuscular diameter was 7.6 micra. No spherocytes were seen on smears, and there was no sickling of incubated blood preparations. The platelet count was 155,000, and the sedimentation rate was 22 mm. in one hour (Wintrobe, corrected). The icteric index was 22, and the van den Bergh reaction was indirect. The bleeding time after finger puncture was two minutes. Clotting time by test tube method was eight minutes. The fragility test showed hemolysis from 0.34 per cent to 0.28 per cent for the patient, and 0.42 per cent to 0.28 per cent for a normal control. Urine examinations for bilirubin and urobilinogen were negative. The Takata-Ara, formol-gel and Hanger tests were negative. The Weltmann reaction showed flocculation in the first three tubes, a shift to the left.

DISCUSSION

The mechanism by which a familial jaundice of a nonhemolytic character is produced is unknown. That some individuals might possess a high threshold in the liver for excretion of bilirubin, just as some persons have high renal thresholds for sugar, is an engaging possibility. It is also possible that such a condition could be inherited. However, studies made by Dameshek and Singer would indicate that such is not the case. By injecting 50 mg. of bilirubin and measuring the blood content after five minutes and one-, two-, and three-hour intervals (method of Ellibott and von Bergmann[9]), they found that there was no marked drop in the bilirubin content of the blood of the individuals having familial nonhemolytic jaundice. There was retention of the material and for this reason they concluded that their evidence pointed to a "constitutional hepatic dysfunction in which the permeability of the hepatic cells to the passage of bilirubin is probably disturbed, with resultant 'regurgitation' of this substance first into the endothelial spaces of the liver and thence into the blood stream." The van den Bergh reaction is indirect, then, because bilirubin has not passed through the liver.

TABLE I

LABORATORY DATA IN TWO CASES OF NONHEMOLYTIC FAMILIAL JAUNDICE

	WILLIAM M.			KATHERINE M.		
	AT BIRTH (NURSERY)	AT 3 MO. (WARD)	AT 3½ MO. (OUTPATIENT DEPARTMENT)	AT 7 MO. (OUTPATIENT DEPARTMENT)	AT 4 YR., 10 MO. (OUTPATIENT DEPARTMENT)	AT 5 YR., 3 MO. (OUTPATIENT DEPARTMENT)
Hemoglobin		11.7 to 12.6 Gm. (Newcomer)				12.2 Gm.
Red blood cell count Number Appearance	 Normal	 4,700,000 to 4,800,000 Normal				 4,820,000 Normal
White blood cell count Differential	 Normal	 16,000 to 17,000 Normal				 7,500 Normal
Reticulocytes	1%	None	1%		1%	
Platelets		100,000				155,000
Corrected erythrocyte sedimentation rate		14 mm./1 hr. (Wintrobe)				22 mm./1 hr. (Wintrobe)
Hematocrit		43%				40%
Mean corpuscular volume		91 cu. microns				83 cu. microns
Mean corpuscular diameter		7.4 microns				7.6 microns
Spherocytes on smear		None		None	None	None
Sickling (after incubation)		None				None
Fragility	0.38% to 0.28% (Normal control, 0.36% to 0.28%)	0.40% to 0.28%	0.40% to 0.28%	0.44% to 0.28% (Normal control, 0.42% to 0.28%)	0.40% to 0.28%	0.34% to 0.28% (Normal control, 0.42% to 0.28%)
Bleeding time		1 minute, 15 seconds (Finger puncture)				2 minutes (Finger puncture)
Clotting time	10 minutes (Lee and White test tube method)	3 minutes, 30 seconds (Capillary tube)				8 minutes (Lee and White)
Icteric index		38	40	22	25	22
Van den Bergh test		Indirect	Indirect	Indirect	Indirect	Indirect
Urine urobilinogen		Negative	Negative			Negative
Urine bilirubin		Negative	Negative			Negative
Takata-Ara test				Negative		Negative
Formol-gel test				Negative		Negative
Weltmann test				Shift to left		Shift to left

Malloy and Lowenstein[10] have described a strain of rats which had hereditary jaundice. Despite an indirect van den Bergh reaction, they showed no evidence of increase in hemolysis or abnormal increase in formation of red blood cells. They concluded that inability of the liver to secrete bilirubin was the reason for the jaundice in the animals studied.

Thirty-four of the cases of jaundice studied by Rozendaal, Comfort, and Snell[4] were classified as "constitutional hepatic dysfunction," and in a few of these cases a familial history of jaundice was obtainable. However, sufficient laboratory data are lacking to make a conclusive diagnosis as to the type of jaundice these cases represent.

It is concluded that the two children herein described possess a nonhemolytic familial jaundice because of the following reasons: their jaundice was constantly present; it was pronounced and could not be classified as latent. The children nevertheless grew well and remained in good health. Their spleens were never palpable. There was no anemia, and reticulocytosis occurred at a normal rate. There was no spherocytosis, nor was there bilirubin or urobilinogen in the urine.

TABLE II

DIFFERENTIATION OF CASES OF NONHEMOLYTIC JAUNDICE AND HEMOLYTIC JAUNDICE

SIGNS AND SYMPTOMS	NONHEMOLYTIC JAUNDICE		HEMOLYTIC JAUNDICE
	WILLIAM M.	KATHERINE M.	
Familial History	Present	Present	Present
Jaundice	Slight to moderate	Slight to moderate	Moderate to severe
Size of liver	Not enlarged	Not enlarged	May be enlarged
Size of spleen	Not enlarged	Not enlarged	Always enlarged
Anemia	None	None	Present
Fragility of red cells	Normal	Normal	Increased
Spherocytosis of red cells	None	None	Present
Increased reticulocytosis	None	None	Present
Bilirubin in urine	None	None	None
Urobilinogen in urine	None	None	Increased
Color of feces	Normal	Normal	Dark
Icteric index	Increased	Increased	Increased
Van den Bergh test	Indirect	Indirect	Indirect

SUMMARY

Two children having a familial jaundice are described. Clinical and laboratory studies would indicate that their jaundice was of a nonhemolytic character.

I wish to express appreciation to Dr. Charles Hendee Smith, to Dr. Harry Bakwin, and to Dr. Joseph Connery for their aid in preparing this paper.

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INFLUENZA MENINGITIS IN A SEVEN-MONTH-OLD INFANT

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INFLUENZAL meningitis is a disease that has its highest morbidity and mortality in the youngest age group. Cures in children under 2 years of age are rare. R. G., a 7-month-old boy, was cured, without residual sequelae, by unusually large doses of sulfapyridine.

R. G., 7 months of age, was admitted to the New York Infirmary for Women and Children on Jan. 3, 1941, with the history of intermittent high fever of eight days' duration, constipation for five days, and pain in right hip for three days. On admission the infant had a temperature of 104.4° F. and pain on pressure and on motion of the right hip. The neck was slightly stiff, the fontanel was normal, and there were no further pathologic neurologic signs. Spinal tap yielded 20 c.c. of slightly cloudy fluid with a cell count of 2,930 per cubic millimeter. The smear showed no organisms but many pus cells. Culture was positive for *Bacillus influenzae*.

Chemotherapy was started on admission, small doses of sulfanilamide being given until the organism was identified. After verification of the organism, at the suggestion of Dr. J. Neal, Chief of the Meningitis Division of the New York City Department of Health, a regimen of combined serum* and sulfapyridine, 3 gr. per pound, was started as is summarized in Table I.

TABLE I

DAY	SULFAPYRIDINE (GR./POUND)	SPINAL FLUID REMOVED (C.C.)	SPINAL FLUID (CELLS PER CU. MM.)	SULFAPYRIDINE LEVEL (MG./100 C.C.)	SERUM GIVEN (C.C.)
1	3.0	25	200	2.7	18
2	3.0	12		2.4	10
3	3.3	20	178	3.4	18
4	3.3	18	239	6.7	15
5	3.3	Unsuccessful			

On the third day after 20 c.c. of spinal fluid had been removed and 18 c.c. of serum had been given, the child went into shock and ceased to breathe but was restored by stimulants.

After the fourth day, all subsequent spinal taps were bloody, and serum therapy was discontinued. The spinal fluid culture remained positive until the twenty-sixth day of treatment. During that time the only therapy used was sulfapyridine in doses of 3.3 gr. per pound for nineteen days, the dosage being reduced to 2 gr. per pound thereafter. At the time of the reduction of the sulfapyridine dosage the blood level had reached 16.3 mg. per cubic centimeter.

There was no toxic reaction from the drug until the thirty-second day of treatment when a total of 1,845 gr. (119 Gm.) had been given. The polymorphonuclears then dropped from 20 to 1 per cent, although total leucocytes remained around 9,000 per cubic millimeter, and the hemoglobin level remained at 70 per cent. The drug

From the Pediatric Service of the New York Infirmary for Women and Children.
*Product of the New York City Department of Health.

was discontinued at this time, and the segmented cells rapidly increased. A blood transfusion was given on the second day after chemotherapy had been discontinued, and two days after transfusion the total white blood count was 10,700; polymorphonuclears, 26 per cent; and the hemoglobin level, 81 per cent. This count remained practically unchanged until discharge on the forty-eighth day.

The clinical symptoms responded very rapidly to chemotherapy. The temperature fell to normal on the eighth day and did not rise again. The arthritis of the right hip cleared after one week without any residual signs, and the general irritability and neck rigidity cleared about the same time. Although the intrathecal pressure became too low to make spinal puncture successful after the sixth day of hospitalization, no evidence of block developed.

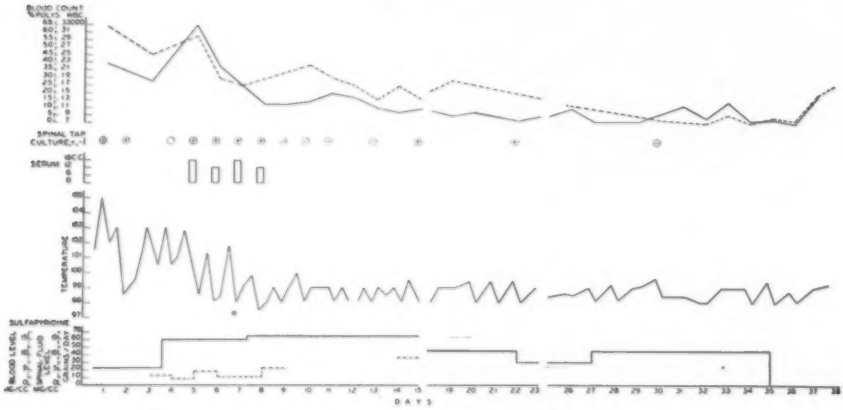

Fig. 1.—Summary of clinical findings and treatment.

The child was discharged in good health, having gained 1¾ pounds in weight and showing no evidence of sequelae. When last seen in the out-patient department at 1 year of age, five months after the onset of the illness, he was in excellent health, alert, responsive, and able to walk normally.

The literature during the past few years contains numerous articles on the subject, interest in reporting cases having been greatly heightened by the increasing number successfully treated since the advent of serum and chemotherapy. Typical early case reports for children under 2 years of age are those of Bloom, who in 1930 reported 187 cases with only six recoveries, a mortality rate of 96.7 per cent, and Neal, who in 1934 reported sixty-two cases with a 100 per cent mortality rate. Aleman, in 1940, reviewed the entire literature, adding heretofore unpublished material dating from 1925 to 1939 from the New Orleans Charity Hospital and her own private practice. The thirty-eight cases in the age group under 2 years showed a 100 per cent mortality rate.

Reports of successful treatment in children under 2 years of age are found somewhat more frequently in the publications of 1939 and 1940. Sulfapyridine was used, alone or in combination, in every case. In December, 1940, Neal reported nine cases occurring in children of 2 years

of age or under, with one recovery, a mortality rate of 89 per cent. This 2-year-old child recovered without sequelae after treatment with sulfapyridine only.

Waring, in 1939, reported a successful case in a 22-month-old child treated with sulfapyridine in doses of 24 gr. per day for thirty-six days, the total dosage being 864 gr. The only blood concentration reported was taken on the eleventh day of treatment and was only 2.4 mg. The weight of the child was not given; therefore, the grains per pound cannot be computed. The child, although cured, had a residual persistent ataxia. Waring at the same time reports two cases in this age group who were treated unsuccessfully with sulfanilamide.

Roche and Caughey, from Auckland, New Zealand, add one case to this group. A child aged 17 months was treated with sulfapyridine from the second to the thirteenth day of illness with a dosage of 0.75 gr. per pound, totaling 270 gr. (18 Gm.). The only additional treatment was blood transfusion. The child recovered without sequelae.

SUMMARY

A case of meningitis in a 7-month-old infant caused by *Bacillus influenzae* is described in which recovery without sequelae occurred following treatment with large quantities of sulfapyridine and a minimal amount of serum.

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MULTIPLE CYSTIC TUBERCULOSIS OF THE LONG BONES

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MULTIPLE cystic tuberculosis of the long bones is a rare disease. Schwentker,[1] in 1931, apparently was the first to describe the occurrence of this disease in a child. Law and Perham,[2] in 1938, collected reports of ten cases from the literature and added one of their own. Subsequent reports have followed by Buttinger,[3] Thornton,[4] Connolly,[5] Martin,[6] Carrell and Childress,[7] and Martin and Fogel.[8]

Bone tuberculosis may take any of several forms. The most common is a destructive process about the metaphysis which involves the joint by spread. The lesion is usually single but may be multiple. Cystic tuberculosis may involve the long bones or the flat bones. In the long bones, it characteristically occurs in the diaphysis, either primarily or by spread from the metaphysis. Solitary cysts are more common, but multiple cysts occur occasionally. The multiple cystic form usually progresses to caseation and abscess formation. Another possible type of bone tuberculosis is *Osteitis tuberculosa multiplex cystoides*. As originally described by Jüngling,[9] the bony involvement is of a pseudocystic nature; the lesions are solid but appear to be cystic on roentgenograms. The affected area of bone is replaced by granulation tissue, composed of epitheloid cells, fibroblasts, lymphocytes, and occasionally giant cells. There is no caseation, and tubercle bacilli are not found on section.

It appears from a review of the literature that instances of at least three types of bone lesions have been reported under the heading of multiple cystic tuberculosis of the long bones. In an effort to clarify this subject somewhat, and because of the rarity of this condition in children, we are reporting the following case.

CASE REPORT

C. C., a 3-year-old colored girl, was admitted to the Gallinger Municipal Hospital on Nov. 24, 1940, because of swellings on both upper extremities. The history revealed that one sibling was receiving antisyphilitic treatment. The father's Kahn test reaction was unknown, but the mother's was negative. The maternal grandmother had pulmonary tuberculosis. The child had been treated in infancy for recurrent retropharyngeal adenitis and a probable congenital malformation of the heart. Roentgenograms of the chest and long bones taken in January, 1940, showed no pathology.

The child's present illness began in May, 1940, when she complained of frequent pains in the lower extremities. She was admitted to another institution and at that time roentgenograms of the long bones showed evidence suggestive of syphilitic periostitis and areas of rarefaction in the shafts of the left radius and right ulna. Electrocardiographic examination and roentgenograms of the chest were normal. The Kahn and Wassermann tests were negative at that time but were reported posi-

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tive on a subsequent examination. Antisyphilitic therapy was begun in June, 1940, and consisted of weekly injections of bismarsen. A repeat roentgenogram taken in October, 1940, revealed the periostitis to be almost completely healed.

Fig. 1.—Photograph showing lesions on arms after sinus formation had developed.

Fig. 2.—Photograph showing lesion on left hand and swellings of right forearm and left elbow.

About one month before admission to our ward, while under active antisyphilitic treatment, swellings on the left hand and forearm, and right forearm, arm, and elbow were noted. The child seemed feverish at night and developed a cough.

There were also several episodes of epistaxis. Despite the continued antisyphilitic therapy, the swellings became progressively larger. They were fluctuant when the child was admitted to this hospital.

PHYSICAL EXAMINATION

The child was poorly developed and nourished and weighed 24.5 pounds. The temperature was 98.4° F. (rectal) and the respiratory rate was 22 per minute. There was a healing lesion beneath the right ear where a previous incision and drainage had been performed. The cervical, axillary, inguinal, and epitrochlear glands were all markedly enlarged. A soft fluctuant swelling was present in the middle third of the left forearm on the ventral aspect. Limitation of extension, pronation, and supination was caused by a swelling in the upper outer region of the left elbow. This was not tender or fluctuant. On the dorsal surface of the fifth left metacarpal, there was a reddened, raised, and fluctuant mass about 2.5 cm. in maximum diameter. A rounded swelling also was noted in the region of the right elbow (Figs. 1 and 2). The heart was somewhat enlarged to percussion, and a systolic murmur was heard in the third left interspace. No significant findings were present in the lungs. The tip of the spleen was palpable, and the liver was 3 cm. below the costal margin. The remainder of the physical examination was essentially negative.

LABORATORY FINDINGS

The blood Kahn reaction on two occasions was four plus. The tuberculin patch test was strongly positive (four plus). Tubercle bacilli were demonstrated on culture from material aspirated from the lesion on the hand. A smear, made from material aspirated from the left forearm, was positive for acid-fast bacilli. A guinea pig was inoculated from this material and died on the thirty-sixth day. Tubercles were found in the liver and spleen, and smears of these lesions were positive for tubercle bacilli. Tubercle bacilli were also found in the gastric washings. Hemograms were normal.

ROENTGEN EXAMINATION

On admission, an anteroposterior film of the upper extremities showed an expansion of the shafts of the left radius and the right ulna. There was marked resorption of the medulla and cortex of the greater portion of the shafts of these bones (Fig. 3). In addition, some moderate periostitis was present. In the proximal end of the left ulna there were several cystlike areas of bone resorption. The fifth metacarpal bone of the left hand was enlarged, and its shaft showed the same type of bone resorption. Roentgenograms of the lower extremities were negative. There was no definite evidence of pulmonary tuberculosis. The diaphragms were normally outlined. The heart was somewhat globular in shape, and the transverse diameter was increased. The silhouette was consistent with that caused by a patent interventricular septal defect (Fig. 4).

COURSE

The temperature curve was essentially normal during the child's stay in the hospital. She complained of pain in the affected areas on several occasions. Antisyphilitic therapy was reinstituted on Dec. 17, 1940, with mapharsen in doses of 0.02 Gm. every four days. Therapy was changed to weekly injections of 0.025 Gm. of bismarsen on Jan. 4, 1941. This was continued throughout her stay in the hospital. On Jan. 1, 1941, the patient accidentally ruptured the fluctuant area on the left forearm and hand, and a few days later the lesions on the right forearm and arm began to drain spontaneously. Besides general supportive care, other adjuncts

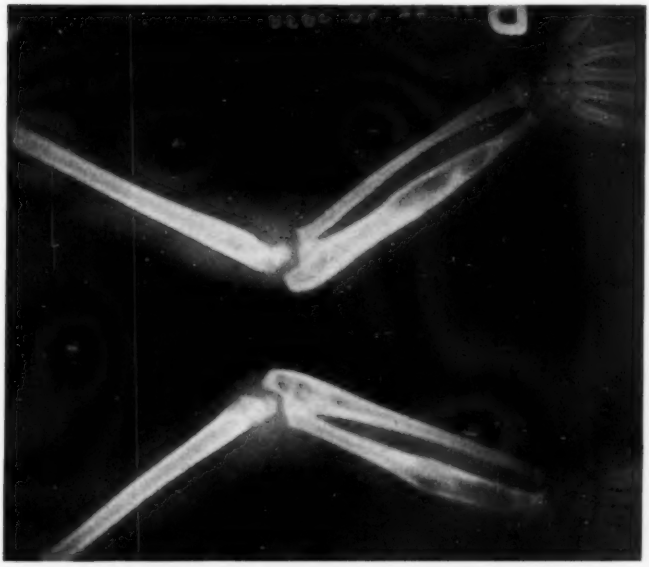

Fig. 3.—Roentgenograms of upper extremities on admission.

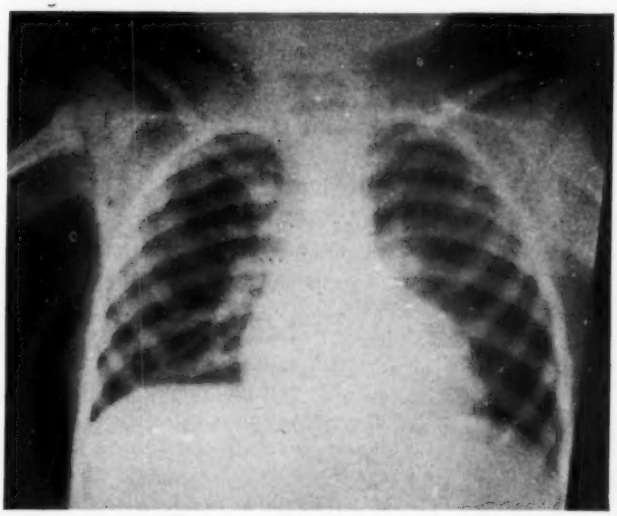

Fig. 4.—Roentgenogram of chest showing cardiac enlargement. No definite evidence of pulmonary tuberculosis is seen.

in the treatment consisted in the use of ultraviolet light therapy, moist compresses, and soothing ointments. The drainage gradually lessened, and when the child was discharged on March 13, 1941, to a tuberculosis sanatorium, there was very little drainage from the fistulous opening on the left forearm, and the lesions on the right forearm and arm, and the left hand had ceased to drain. Roentgenograms of the upper extremities on discharge showed marked improvement in the bone lesions (Fig. 5).

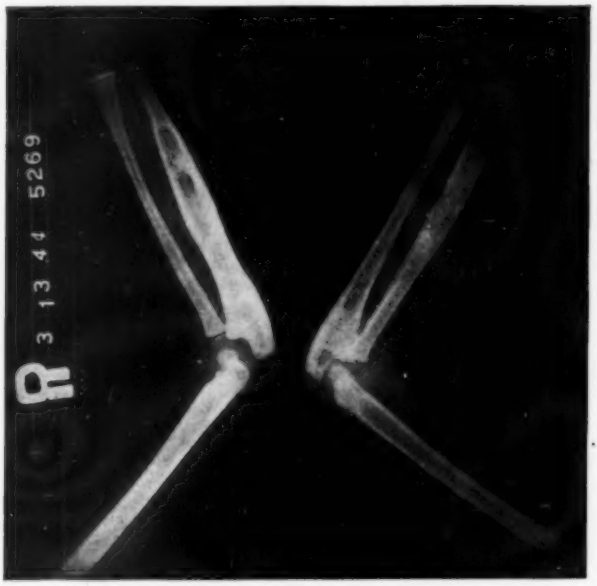

Fig. 5.—Roentgenograms of upper extremities on discharge to a tuberculosis sanatorium.

COMMENT

Multiple cystic tuberculosis of the long bones is the subject of considerable discussion at the present time. Law and Perham[2] classified multiple cystic tuberculosis of bone and Jüngling's disease as manifestations of the same disease process. From evidence available at the present time it appears that these are two different conditions. Ellis,[10] Connolly,[5] and others also consider them to be separate entities. Ellis believes that Jüngling's disease is osteal sarcoid and should be classified with other sarcoid lesions. The salient features of Jüngling's disease are:

1. The tuberculin test is usually negative.
2. The disease involves the small long bones of the hands or feet or both; rarely the large long bones of the limb.
3. The roentgenographic picture is characterized by circumscribed honeycombed areas of rarefaction with no periostitis of fibrosing reaction.

4. Sinus formation is not seen.

5. The disease is associated frequently with skin lesions, most commonly *Lupus pernio* and Boeck's sarcoid.

6. The microscopic picture is typical, and guinea pig inoculation usually gives negative results.

7. The cystic honeycombed areas tend to heal slowly.

In multiple cystic tuberculosis of the long bones the following usually is noted:

1. The tuberculin reaction is positive.

2. The bony involvement is asymmetric and many bones may be involved. The diaphysis of the long bone is involved primarily or secondarily by extension from the metaphysis.

3. The roentgenographic appearance of the involved bones is typical. There is a variable number of cystic areas of rarefaction with slight to moderate sclerosing reaction. Expansion of the shaft of the bone is usually present which ofttimes gives the bone a fusiform appearance. A variable degree of periostitis is seen.

4. Localized swelling and sinus formation are present in the majority of cases.

5. Pulmonary tuberculosis can be demonstrated by the roentgenogram in the majority of instances.

6. The tuberculous origin of the bony lesions can be proved by histologic or bacteriologic means, or both.

7. The bony lesions tend to heal slowly.

Of the seventeen cases previously reported as being multiple cystic tuberculosis of the long bones, there are eight in which there are typical clinical and roentgenographic pictures of this condition. In four of these[11] the diagnosis was confirmed by histologic methods, and four[12] were confirmed by bacteriologic methods. In addition, there are three cases[13] otherwise typical in which the proof of the tuberculous nature of the lesion rests on the concomitant finding of definite tuberculosis elsewhere in the body. Thus there are eleven cases that reasonably might be accepted as proved cases of multiple cystic tuberculosis of the long bones in children. Stalman's[14] and Bayer's[15] cases, as pointed out by Ellis,[10] are probably definite cases of Jüngling's *O. tuberculosa multiplex cystoides* or sarcoid. In Stalman's case a non-virulent strain of the tubercle bacilli was recovered by injection of material obtained from a bone lesion into a guinea pig. This case is otherwise typical of the aforementioned condition. From the roentgenograms reproduced and from the data submitted, the cases reported by Martin,[6] and Law and Perham[2] cannot be differentiated from the more usual form of tuberculous osteitis. The second case of Vastine and Bacon[11a] in a 2-year-old child had no involvement of the long hollow bones. There was a tuberculous dactylitis and a cyst of the mandible. Denk's case[16] is difficult to classify.

In our patient the disease is definitely not typical of Jüngling's disease, as there is true cyst or abscess formation, involvement of the larger long bones with only one metacarpal bone attacked, and a positive tuberculin reaction. This case fulfills most of the criteria outlined under multiple cystic tuberculosis of bone, except that definite pulmonary evidence of tuberculosis is lacking. It is logical to assume, however, that pulmonary tuberculosis was present since tubercle bacilli were obtained from the gastric washings.

Early in the course of the child's illness it was thought that syphilis might explain the whole of the osseous pathology. This was disproved by the progression of the lesions, comparing roentgenograms on admission with plates taken several months previously at a neighboring institution, while the child was receiving adequate antisyphilitic treatment; and by the subsequent demonstration of tubercle bacilli from two lesions on different occasions.

It is of interest to note that the bony lesions showed definite improvement in a period of three months under a regime of general symptomatic and hygienic care.

SUMMARY

A case of multiple cystic tuberculosis of the long bones in a 3-year-old child is reported. It is suggested that this condition and Jüngling's *Osteitis tuberculosa multiplex cystoides* are separate entities. Differential criteria are outlined.

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THE PREVENTIVE ASPECT OF BEHAVIOR PROBLEMS IN CHILDREN

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SOMEWHERE in early literature a Greek philosopher is reported to have said, "He who argues with me must first define his terms," or words to that effect. Therefore, before we start a discussion of behavior problems, a few words of explanation as to what we are talking about might be in order.

Some years ago in discussing this problem with several psychiatrists I said that if we could develop in mothers a sort of "third child" attitude toward the first child, many of our behavior problems would be prevented. Subsequently one of these psychiatrists, in discussing the pediatrician's role in mental hygiene, said that while he agreed with me in part, there was still no proof that the second or third child was any better adjusted to life than the first. Now if one judges the incidence of behavior problems from the records of consulting psychiatrists and child guidance clinics, this may be true. But I still believe that there are a great many problems that never become of such major proportions as to reach the psychiatrist but are still important factors in family harmony. And I believe that the bulk of these minor problems have their origin in the parental attitude toward the child rather than in the child himself. This, then, narrows our discussion somewhat by eliminating those children showing deviations of such magnitude as to have come to the attention of formal child guidance organizations or law enforcement agencies. I also would eliminate from consideration those of definitely abnormal mentality, thus bringing us down to a discussion of those perfectly normal youngsters whose behavior, in one way or another, is a cause of some concern to their parents. As a matter of fact, if we stated the situation accurately, we should say that we are considering the parents who annoy their children.

What, then, are the parental attitudes that tend to disrupt the harmony of the family circle? I believe we can best answer this by following a hypothetical family in more or less chronologic fashion and pointing out some of the incidents that are apt to cause trouble.

Let us assume that we first meet this family shortly before they embark on that memorable journey, bringing home the new baby. I think it would be a distinct advantage to know the adult members of the family long before this but, unfortunately, the pediatrician seldom has a chance to do so. However, we learn from the history that the mother was under competent medical supervision for seven months, thus assuring us that both she and the baby are in the best possible physical condition to start on their great adventure. This is, of course, a tremendous ad-

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vantage but is it really enough? Should not adequate prenatal care somehow or other include some preparation of the young mother for the job that lies ahead of her just as soon as the baby arrives and becomes an integral part of the family? I am sure it should, but I am equally sure that I cannot give any universally satisfactory answer as to how it should, or how it can, be done. The great difficulty apparently lies in the satisfactory control, not elimination but control, of those powerful emotional factors that are such an inevitable, and as a matter of fact, such an immensely desirable part of the picture. It is always difficult, if not impossible, for reason and rationalizing to prevail when the powerful emotion of fear has been aroused. And in the case of the young mother with her first infant it is usually not the common, ordinary, garden variety of fear that we encounter, but something more nearly resembling panic. The familiar example of this difficulty in balancing emotions and reason is that of the well-trained kindergarten teacher who has done such a grand job with other people's children but who so frequently gets in a jam with her own first child. Now, this might seem to indicate that if such thorough training and experience as this is not a guarantee against trouble, then the small amount of education possible during a normal pregnancy would certainly be futile. However, being a true believer in the virtues of education, I do not like to accept any such conclusion and am much more inclined to agree with what Kipling said relative to the training of young soldiers in his poem, "The Eathen":

"And it looks like teachin' wasted when they duck an' spread an' 'op,
But if 'e 'adn't learned 'em, they'd be all about th' shop."

So, anything we can do during her pregnancy to foster a feeling of enthusiastic confidence toward the job is going to be of some assistance in keeping the young mother from being "all about the shop" when the going gets a bit tough.

And now let us get back to our first interview with this young family. The first task will be to assure them that we have carefully examined the baby and find him to be a sound physical specimen; for make no mistake about it, the young mother will have been counting his fingers and toes, and wondering how permanent are those red marks between the eyes and on the back of the neck. So we discuss with them his physical status up to the present and what we expect him to do from here on. That is, that we expect him to gain not less than four ounces a week, to sleep a good part of the time, to give his first smile of recognition at four to five weeks, and so forth, but always emphasizing the fact that the pattern of normal development allows for rather wide variations. Then we check up on the completeness of the home equipment, such as scales, bed, etc., make sure the mother knows how to give a bath and make up complemental formulas, and finally give her a chance to unburden herself of the thousand and one questions that have been piling up on her. And as a parting instruction we tell her that there are sure to be some forty thousand more questions that will arise to plague her

in the next few weeks and that she should, nay, that she must, feel free to call up and get them off her mind. Most of them will be unimportant but until she gets the hang of things she must feel perfectly free to holler and find out. And this, may I emphasize, is one of the most important phases of a preventive program. That is to say, that until our educational methods become so sound as to overcome fear, these young mothers must have perfectly ready access to the sympathetic ear of a skilled advisor. For how can we expect an unskilled and untrained young mother, whose infant is screaming bloody murder, not to assume that he has infantile paralysis or perhaps a touch of hydrophobia instead of just a few good old hunger pangs. The answer is, of course, that she cannot be expected to know and hence must be able to call for help while she is learning the ropes. And now a word as to that sympathetic ear. It is usually grandmother's that is the most available and most sympathetic, and I must admit that many, many times it is a perfectly good organ into which to pour troubles. But, in spite of my faith in grandparents, I prefer to cast my vote for the medical man as offering the best chance of giving sane and sound advice. However, it must be admitted that there is a real need for an increased interest on the part of general practitioners toward the problems of the well child.

And now that we have this family safely established at home, let us consider some of the symptoms that are apt to make the young mother think her baby is sick. In my experience the three most troublesome symptoms are (1) vomiting, (2) constipation, and (3) that indefinite but definitely distressing something or other that goes around town bothering babies under the rather all-inclusive title, colic. I have no intention of discussing these symptoms in any detail but there are certain points that I believe are of importance.

Vomiting is a very common symptom in the newborn infant but most of the time it is of no nutritional importance, being merely a sort of nonchalant return of part of each feeding. Under these conditions, that is, where there is no interference with weight gain, it can safely and in fact should be ignored. If we try to control this type of vomiting by various changes in feeding we are pretty sure to end up no better off because there was no element of food disagreement in it in the first place. Therefore, if a baby spits up some or even most of his feedings but is still able to gain at a satisfactory rate we should supply the mother with a large size box of kleenex and try to convince her that her baby is really quite a clever little fellow, which, incidentally, he is. Of course, if the vomiting does interfere with nutrition we have a different problem on our hands; one that calls for careful study and various methods of control. But, after all, the mothers of such babies are entitled to worry so they are not a part of our present problem.

Next, the so-called constipated baby. If he is breast fed, I am convinced that he will never be constipated. He may have a stool only once a week to be sure, but that is not constipation; that is a break for

the mother. And if we can get her to accept the situation in that spirit, more than half the battle will be won. Of course if, without a movement, he becomes very restless and fussy, it is well to assist him by inducing one with a suppository or small enema. In the artificially-fed infant one cannot be quite so complacent about infrequent movements because here they will become dry and hard if not passed with reasonable regularity. However, even so, the mother must be assured that it is of much less consequence than usually supposed and can be handled by dietary means in most cases.

And now for colic. Perhaps some of you belong to the school of thought that believes there is no such thing. Well, I can only liken the situation to Mark Twain's remark when he was criticized by a Christian Scientist for complaining of pain because, his friend said, there is no such thing as pain. Mark Twain said that maybe his friend was right and that there was no such thing as pain, but what he had was serving the same purpose as pain. And so it is with colic; maybe there is no such thing, but there is certainly something that makes some perfectly healthy babies cry almost unbelievably loud and long without interfering with their perfect health. Obviously then, our biggest job in colic is the correct interpretation and explanation of the whole situation. In other words, it is vitally important to recognize that the nutrition and development of our baby is all that can be desired, and that this excellence of development is, after all, what we are most interested in. If he can be a quiet, placid little fellow at the same time, so much the better, but if he has to cry a lot while he is growing, well, what of it? Of course, there are some things that can be done to give relief. For example, if he is of the so-called hypertonic type, small doses of phenobarbital will help to quiet him down. And at times, minute doses of atropine are very effective. The main thing, however, is to try to encourage the parents and to assure them that the baby will get over it eventually no matter what we do, and also that he will be none the worse for it.

Well, we seem to have been spending a lot of time so far discussing relatively trivial matters and you may well ask "So what? Why bother with these trivialities?" My answer is this: If we assume, and I do assume, that it is next to impossible for a worried or frightened mother to meet the multitudinous problems of child training with that serenity of mind that is so important to the smooth development of the family, then anything we can do, no matter how trivial it may seem, to alleviate fear and worry is well worth our while.

Our next contact with this little family will probably be in relation to the very annoying problem of appetite, which, by the way, is vastly more complex than simply dealing with methods of getting a child to eat. However, as our present discussion is concerned with prevention, I will confine myself to that phase of the subject. At the outset we should recognize the difference between hunger and appetite. Hunger is

that unpleasant sensation that occurs when the stomach is empty, while appetite, at least as it relates to eating, is that pleasant relationship that is built up between foods and their control of hunger.

Our first encounter with this loss of appetite frequently comes when new foods are first added to the diet. Now a normal infant is usually pretty hungry at the end of four hours and is expressing himself in the only way available to him, so when a spoon containing a semisolid mass is put into his mouth he fails to recognize it as anything that will help the unemployment situation then existing in his stomach, which really does make him mad. And, if the mother has been given rather exact instructions as to the necessity of getting a certain amount of cereal into her baby twice a day, she is apt to roll up her sleeves, grit her teeth, and get ready to go to work on him. And then, ladies and gentlemen, get your ringside seats, for you are about to witness the battle of the century. And if you want a tip from an insider, put your bets on the baby; he wins with such monotonous regularity that it almost seems as though the fights were fixed. On the other hand, if the mother is told of the importance of cereals and then is tipped off as to the possibility of mutiny, she can be prepared to meet it with guile rather than the usual methods employed to suppress mutiny. If, for example, she will get the baby's mind off the unpleasant prospect of immediate death from starvation by giving him part of his familiar milk feeding, she will then find him in a much more amiable frame of mind and willing to cooperate with her in these strange notions she seems to have been picking up. And later on, after he has become accustomed to cereals, we may have the same show all over again when we start vegetables. This time the trouble is mostly a question of taste, because after all these cereals are, for the most part, pretty innocuous mixtures, so when the baby opens up and finds that instead of the familiar cereal he has clamped down on a mouthful of spinach, he quite naturally screams "poison" and spits it out. Then the long-suffering mother must clear the debris from her eyes and quietly try again. Notice, please, that I say quietly try again, because at this age many babies are very alert to the fun of starting a riot and may repeat the performance just for the fun of it. This may lead her to try diverting his attention so that she can slip some food into him while his jaw is hanging open with wonder at some new object, but to do so is somewhat analogous to the first pipeful of opium; it is so terribly hard to stop.

In summing up the preventive aspects of the appetite problem I would like to offer a few "don'ts."

1. Don't worry if the baby refuses some or even most of his feedings for days at a time so long as he remains well otherwise. He will eat when he gets hungry if you do not get him mad or scared by stuffing food down his unwilling neck.

2. Don't be surprised if he objects to new foods; try them slowly and calmly and most of them will be accepted.

3. Don't try to divert him in order to make him eat. To do so will only lead into an endless maze of new tricks, new stories, etc.

4. Don't get excited if he shows a dislike for some foods. He has just as much right to his likes and dislikes as anyone else but he can be taught to overcome a lot of them with patience and tact.

5. When he gets a little older, don't use mealtime as an occasion to recite to father all the day's crimes and shortcomings.

6. Don't be too particular about his table manners in the early stages. Good manners are important, to be sure, but can be acquired slowly and without running the risk of ruining his appetite by being everlastingly on his neck about them.

7. Don't forget that starvation is a pretty slow process and that a few days on very slim rations will do neither him nor his appetite any harm, while circus performances and Simon Legree methods will certainly do his appetite no good.

So much, then, for our attempts to dispel the emotions of fear and worry from these young mothers in order that other and more pleasant emotions may take their proper place in the picture. And at the risk of being monotonously repetitious, may I say again that if a mother handles her baby with fear and trembling, she cannot help transmitting some of that emotion to the baby and then neither one of them can get her full quota of fun out of their early associations.

Now let us move along life's rosy path and look for more trouble. As the child's capabilities increase, his horizon of activities and interests naturally expands and he becomes less and less dependent upon his parents for the fulfillment of his every need. This is a tough realization for some parents to take but it is of the greatest importance that he be allowed and encouraged to learn to do things for himself even though his fumbling ways are no end trying to those about him. It is only by thus learning to take care of himself that he can develop that self-confidence that is so important to his stability later on. And, as he learns to do for himself, he should naturally become a little less obviously the center of the family circle but move slowly out to occupy a different but still very important place in the circle. He will then be in a much better situation to cope with that devastating experience, the arrival of little brother or sister. Now, if we examine for a minute what happens at this critical time, when, if ever, "a feller needs a friend," we will understand the mechanism behind the multitudinous vagaries of behavior that are so apt to occur. Here we have a little lad, or lady, who, like the marines, has had the situation well in hand and has been unquestioned commander of a willing bunch of slaves, but who does not realize that he has achieved this position, not through merit alone, but largely by family influence and parental love. So when he finds that a newcomer, a squalling, squint-eyed little guy that cannot even bounce a ball or button his coat has moved in and without so much as a "by your leave, sir," has taken over his command, is it any wonder that we find him ready to fight back with every trick his ingenious little

mind can think up? As a matter of fact, if he did not fight to hold his position he would be a sort of spineless little worm that would not be much of an asset to the family anyhow. And, in fighting back, our deposed little commander-in-chief seldom focuses his attention on the usurper personally so that the family fails to recognize his bizarre behavior as really related to the new arrival. Thus, when he starts wetting his pants again, or kicking visitors in the shins, or refusing to eat, it must be recognized as a desperate attempt to again be the center of attention, even though at times there results a rather painful center of attention. Any attention is better than none but it is really not attention, as such, that he is after. It is rather attention as a symbol of his importance in his world that he is seeking and striving for. We must remember that his empire has come crashing down about his ears, dealing a paralyzing blow to his self-confidence. Therefore, in order to bring him to a state where bizarre behavior is not necessary to him, we must make him feel that he is just as important in the family circle as he ever was, but, of course, in other ways than formerly. If, while preparations for the new baby are under way, he is given little responsibilities for which he receives big dividends in praise, then his need for attention will be gratified and at the same time he will be learning the very valuable art of cooperation. The attitude of the parents toward the older child must be as though they said to him: "This business of having a little baby in the house is all very well in its way, but we would certainly hate to undertake the job without the help of a big, reliable assistant like you." Thus the chances of maintaining friendly relationships between all members of the family will be greatly enhanced.

In this respect I think we might well borrow one idea from the Indians. They very seldom used corporal punishment and never used threats of it. Any threatening that was done was of dire consequences from some outside source, as, for example, "The old man of the mountain will get you," or worse yet, "The white man will get you if you're not good," but never did they say, "Just wait till dad comes home and he'll whale the pants off you." Thus, you see, they did not build up any fear-love complex situations and found it easier to develop a cooperative family relationship.

And this spirit of cooperation instead of coercion and the building up of self-confidence obviously are not limited to the situations arising from the arrival of a new child. It is a fundamental principle and is just as applicable to the only child and his varied problems as anywhere else. It also applies to many of those troublesome symptoms such as enuresis and temper tantrums. If he feels competent to meet life's problems as they arise and has been getting the normal amount of satisfaction from his normal activities, then such outbursts will not be necessary for him. So when a child throws himself on the floor and begins kicking and screaming, our discussion of the case must not center about the relative merits of a hairbrush to the rear as against cold

water to the face, but we must consider the whole picture with a view to finding out what the parents are doing to annoy and goad him to the point where he has no recourse but to burst out in this explosive manner.

And now, as a final part of our discussion, let us briefly touch on some of the difficulties that surround the application of this rather simple sounding program. For one thing I think we must admit that no two people are exactly alike as to temperament. I think this fact of varying personalities was very beautifully stated by an old German saloon-keeping philosopher in Madison. My uncle, who was one of the early physicians in Madison, used to stop in for a chat whenever his evening rounds took him in that direction. One evening they were discussing this thing of personalities and how it takes all kinds of people to make a world and the old fellow summed it up this way, "I tell you how it iss, doctor. Der ain't no man iss chust like himself. Now der iss die mutter; she ain't chust like himself; and so am I und you are too, ain't dot so, doctor?" Now whether or not this variation in temperament is a question of endocrine activity, I am sure I do not know. But the end result is that no two individuals react to their environment in exactly the same way. One may need much less encouraging stimulation than another, in fact, rather skillful neglect, where the other needs encouragement and praise even where no grounds for praise seem to exist. Nevertheless, whatever the temperament, the principle of fostering self-confidence remains the same, for the proverb. "nothing succeeds like success" is not just a catch phrase; it's the gospel truth.

Another difficulty in applying these principles is maternal fatigue. This business of bringing up children, whether it be one or a whole flock, is an overtime job, and it is no wonder that nerves occasionally become "jangled" even in spite of the great popularity enjoyed by certain brands of cigarettes. Now what, if anything, can be done to assist these mothers in keeping on an even keel? One thing that I believe does help is to provide companionship of a suitable age for the youngster. It is virtually impossible, at least it should be impossible, for a mother to play with her child, on his own mental level for any length of time. Therefore, if her circle of friends does not provide adequate playmates, a well-run, but not too scientifically supervised, nursery school may prove a veritable lifesaver in giving her those little interludes that are so helpful in keeping out of ruts.

And now, in conclusion, I believe I can sum up my attitude toward the problem of preventing many minor behavior disturbances by quoting a line from that well-known play, "*The Silver Cord.*" You may remember this play as being an excellent portrayal of the destructive effects of misguided mother love. The lines I refer to are spoken by the harassed young woman whose chances of happiness are being destroyed by her dominating mother-in-law. She finally makes this statement: "What I say about children is that you should have 'em, and love 'em, and leave 'em be."

Critical Review

BREATHING CAPACITY DURING THE FIRST DECADE OF LIFE

A Review of the Literature on Techniques, Standards, and Clinical Implications

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STUDIES of breathing capacity† (vital capacity, lung capacity) have been appearing in the literature of medicine and anthropometry with a fair degree of regularity since 1679, when Borelli first attempted to measure the volume of the lungs. An extensive review of this literature was presented by Myers[44] in 1925. Subsequent shorter reviews have been prepared by Lemon,[36] Arnett and Kornblum,[4] Thomas,[57] and Cureton.[15] In each of these papers the main emphasis has been on the application of the test to adult subjects. This limits their usefulness for those whose major interest is in the health and growth of young children. It is for this group of pediatricians and others (i.e., those interested in the physical development of preschool and elementary school age children) that the present review has been prepared. Its purpose is to draw together such information as is available concerning the uses and significance of the test of breathing capacity for children during the first ten years of life.

Instruments and Technique.—The importance of using a spirometer adapted to the ability of young subjects has been pointed out by Edwards and Wilson[22] and Metheny.[42] Less directly, it has been recognized by several investigators, including Hutchinson,[34] Bowen,[11] and McCloy,[37] who pointed out that the difference in air pressure inside and outside the spirometer tends to reduce the measured volume of the air expired. While this reduction in volume due to the force necessary to overcome the inertia of the system and friction tends to be constant for any given spirometer, it becomes proportionately larger as the breathing capacity decreases. With this in mind, Edwards and Wilson[22] emphasized: "A spirometer that offers minimal resistance to the egress of air from the lungs is necessary for measuring the vital capacity of children." Metheny noted that the large cross section of the spirometer made the test uninteresting to small children, since the bell rose but slightly in response to their efforts. To maintain interest and to obtain more accurate readings with children from 2 to 7 years of age, she used a specially constructed spirometer, five inches in diameter and eleven inches in height.

The feasibility of administering the test of breathing capacity to children below school age has been questioned by Roberts and Crabtree[49] and Emerson and Green.[24] Roberts and Crabtree wrote: "In children of 6 years and under the vital capacity readings are unsatisfactory, for the reason that it is difficult to secure the cooperation of the child." Emerson and Green stated that: ". . . proper coaching of the children and experience are of greatest importance in securing reliable

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†In the research literature the three terms have been used interchangeably. In this report the term "breathing capacity" will be used consistently except in direct quotations.

results. Children below 7 years do not cooperate well. . . . Determinations of vital capacity below seven years of age are unreliable." But satisfactory results have been obtained by other experimenters. Jersild[34a] working with children between 5 and 7 years of age, commented: "There were frequent indications that the subjects were responding to full capacity during the training period." Wilson and Edwards[60] wrote: "Contrary to the more or less general opinion, children use the spirometer with surprising ease and intelligence. A child of 6 years, of average mentality, in the majority of instances requires only a single demonstration. The number of cubic centimeters registered will be within fifty on repeated satisfactory trials." Metheny[42] found that there were more problems of instruction and motivation in working with preschool children, but she was successful in developing a technique for giving the test to children as young as 2 years, 6 months of age. She presented specific directions for obtaining measurements of breathing capacity at this age.

Reliability of the Test.—Jersild[34a] administered the test on four consecutive days to two groups of twelve children, ages 5 to 7 years. Product-moment correlations of the best score on the first two days with the best score on the last two days were 0.94 and 0.79 for the two groups respectively. Metheny[42] tested 206 children, 3 to 6 years of age, on each of six consecutive school days. Correlations of the best score on the odd days with the best score on the even days were 0.97 for boys and 0.96 for girls. For the separate age-sex groups the correlations ranged from 0.80 to 0.96.

Age Means for Breathing Capacity.—The average breathing capacity of boys and girls at given ages* has been reported by numerous investigators. In Table I is given a description of the data on which the principal studies are based, arranged chronologically with reference to date of publication. In Tables II and III† the average breathing capacity found for each age by each of the investigators is given. These values are arranged in order of magnitude, taking the value for 10-year-old boys as the point of reference. For those studies in which the investigator has specifically defined the age interval used and the number of trials given, it is so indicated. All reported averages have been changed into cubic inches so that they may be readily compared.

From these tables it would seem that there is a tendency for the average breathing capacity for any given age to increase from decade to decade.‡ There is also evidence that socio-economic status may play a part, since most of the higher values were obtained for private school children. Whichever of these may be the important factor, it is evident that it is relatively meaningless to classify a child as above or below the average for his age unless reference is made to the sample on which the average was obtained.

Sex Differences in Breathing Capacity.—The existence of a sex difference in breathing capacity has been implied by every investigator

*Deming and Hanner[15] attempted to measure the breathing capacity of newborn infants by inserting them in the airtight chamber described by Deming and Washburn.[19] Excursions of the child's chest in breathing caused displacement of the air in the chamber, the amount of which could be measured. From the maximal excursions made while the infants were crying, they found breathing capacities ranging from eight to eleven cubic inches for eighteen infants between 1 and 11 days of age.

†The averages given for the ages 11 to 18 are also included since they were readily available and are of interest for comparative purposes.

‡MacKinnon and Jackson[40] found that the average breathing capacity of male entrants to the University of Minnesota was 4355 cu. cm. in 1929 as compared with 4187 cu. cm. in 1898. Newcomer[43] found that the breathing capacity of Vassar College freshmen increased from 166 cu. in. in 1905 to 180 cu. in., 1916-1920.

TABLE I

DESCRIPTION OF DATA OF PRINCIPAL STUDIES REPORTING AGE MEANS FOR BREATHING CAPACITY OF SCHOOL AGE CHILDREN

INVESTIGATOR	DATE	CASES		AGE RANGE (YR.)	SUBJECTS	TRIALS
		BOYS	GIRLS			
Gilbert[29]	1894	594	c650	6 to 17	Not described	†1
Gilbert[30]	1897	c650	c650	6 to 18	Iowa public schools	†1
Christopher[13]	1900	609	603	4 to 16	Chicago public schools	Repeated
Smedley[51]	1900	2,788	3,471	4 to 18	Chicago public schools	Repeated
Hastings[32]	1902	6,711	6,442	5 to 18	Nebraska public schools	2 to 3
De Busk[16]	1913	105		7 to 16	Colorado private school	†
Baldwin[5]	1914	25 to 40 each age	25 to 40 each age	7 to 17	Chicago and New York private schools (repeated measurements on same children)	†
Stiles and Graves[56]	1915	751	867	6 to 17	Southern "City of X" public schools	†
De Busk[17]	1917	104	96	7 to 15	Colorado private school	
Baldwin[6]	1921	†	†	7 to 17	New York private school	†
Stewart[52]	1922	1,289	1,220	4 to 18	Minneapolis public school	Competition
Holzinger[33]	1924	3,373		6 to 60	English (Galton's original data, collected much earlier)	†
Baldwin[7]	1925	300	270	7 to 15	California "geniuses"	†
Baldwin[8]	1928	22,913	10,737	5 to 18	Composite	†
Schwarz, Britten, and Thompson[50]	1928	2,162		3 to 60	New York public schools	3
Collins and Clark[14]	1929	15,000	15,000	6 to 15	"Old Americans" from all sections of United States	3 to 5
Kelly[35]	1933	3,820	2,547	12 to 18	Baldwin's data, principally Iowa private schools	†
Meredith[41]	1935	4,307		5 to 18	Iowa private school	3
Boynton[12]	1936		1,966	6 to 18	Iowa private school	3
Abernethy[1]	1936	179		8 to 18	Chicago private school (repeated measurements on same children)	†
Dimock[20]	1937	200		12 to 16	Chicago Y. M. C. A.	3
Metheny[42]	1941	115	91	3 to 6	Iowa private school	5 on each of 6 days

TABLE II

AGE MEANS FOR BREATHING CAPACITY FOR BOYS

(Reduced to Cubic Inches and Rounded to the Nearest Cubic Inch)

INVESTIGATOR	AGE (YR.)																TYPICAL AGE INTERVAL
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Hastings, 1902			41	51	61	70	81	90	101	111	124	140	161	191	221	222	
Gilbert, 1894				56	66	73	83	91	104	114	120	125	161	187	204		
Smedley, 1900*		45	57	62	71	80	90	98	106	115	129	146	165	190	213	223	9-0 to 9-11
Christopher, 1900		44	57	72	76	85	90	99	109	120	138	154	165	193			9-0 to 9-11
Gilbert, 1897				60	72	85	90	99	122	121	136	154	182	194	233	231	
Stiles and Graves, 1915†				64	74	83	88	102	109	125	137	154	177	200	213		
De Busk, 1913					67	91	105	105	116	121	139	149	185	200			9-0 to 9-11
Holzinger, 1924				74	81	88	97	106	116	127	139	153	170	190	206	228	9-0 to 9-11
De Busk, 1917					76	93	92	107	122	133	143	149	182				9-0 to 9-11
Collins and Clark, 1929				65	74	86	96	107	118	129	144	162	175				
Baldwin, 1921					79	88	99	109	121	133	149	169	196	224	247		
Baldwin, 1914‡					77	86	96	112	120	126	134	151					
										123	139	163	192	213	236		11-0 to 11-6
Schwarz, Britten, and Thompson, 1928		49	56	65	78	90	105	112	125	139	153	171	203	228	248	251	9-0 to 9-11
Stewart, 1922		48	57	71	79	90	105	115	122	133	150	166	193	209	230	240	
Baldwin, 1925§					79	94	113	115	129	145	157	181	213				
Baldwin, 1928				72	82	94	106	116	124	137	153	179	207	256	269	278	10-6 to 11-5
Meredith, 1935‖			67	72	79	92	103	116	128	142	157	180	204	227	247	257	10-6 to 11-5
Abernethy, 1936						102	104	127	135	146	165	189	212	238	253		Measured on birthday
Kelly, 1933										151	167	183	213	235	259	270	10-6 to 11-5
Dimock, 1937										150	175	200	223	253			
Metheny, 1941	42	51	69	74													3-6 to 4-5

*"Birthday Norms" adjusted to make the mean age exactly 6 years, 6 months or 7 years, 6 months, etc.

†Dry spirometer used.

‡Children measured at half-year intervals.

§Means for tall, medium, and short children reported; those for medium children given here.

‖Five-year-old age group is 5 years, 6 months to 5 years, 11 months. Six-year-old group is 6 years to 6 years, 5 months of age.

TABLE III

AGE MEANS FOR BREATHING CAPACITY FOR GIRLS

(Reduced to Cubic Inches and Rounded to the Nearest Cubic Inch)

INVESTIGATOR	AGE (YR.)															TYPICAL AGE INTERVAL
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Hastings, 1902			35	43	51	60	70	77	82	94	106	113	123	131	151	150	
Gilbert, 1894				50	54	66	73	82	83	104	105	105	116	115	119		
Gilbert, 1897				56	62	70	82	84	91	103	118	119	128	131	128	138	
Smedley, 1900*		46	52	58	65	70	78	86	93	102	111	123	132	128	142	143	11-0 to 11-11
Christopher, 1900		49	55	61	70	76	80	88	96	103	111	124	131	139			11-0 to 11-11
Stiles and Graves, 1915†				52	67	72	81	91	98	114	129	136	140	145	147		
De Busk, 1917					75	79	97	100	108	116	144	143	160				11-0 to 11-11
Baldwin, 1914‡					71	82	87	101	114	128	146						11-0 to 11-6
										125	134	154	165	177	183		
Stewart, 1922		40	54	66	75	85	92	102	110	125	143	159	164	169	180	189	
Baldwin, 1928				60	72	82	93	102	114	128	146	159	169	175	178	179	11-6 to 12-5
Baldwin, 1925§					73	89	99	103	116	128	156	163	191				
Baldwin, 1921					73	79	91	104	113	127	144	157	173	182	185		
Boynton, 1936				65	74	83	95	105	119	135	152	167	172	177	180	179	
Collins and Clark, 1929				65	74	86	96	107	118	129	144	162	175				
Kelly, 1933										129	147	158	168	173	181	180	11-6 to 12-5
Metheny, 1941	37	47	57	69													3-6 to 4-5

*"Birthday Norms" adjusted to make the mean age exactly 6 years, 6 months or 7 years, 6 months, etc.

†Dry spirometer used.

‡Children measured at half-year intervals.

§Means for tall, medium, and short children reported; those for medium children are given here.

who has reported separate averages for boys and girls. Specific statements to that effect have been made by Myers,[44] Stewart,[52] Smedley,[51] Roberts and Crabtree,[49] Moersch,[43] Baldwin,[5] Collins and Clark,[14] and Whipple.[58] Metheny[42] found that the difference between breathing capacity means for boys and girls from 3 to 10 years of age was greater than could be accounted for by the difference in height between the two sexes at these ages.

Anthropometric Relationships.—Correlations of breathing capacity with other physical measurements taken during the first ten years of life have been reported by Baldwin,[6, 7] Abernethy,[1] Gates,[28] McCloy,[38] and Metheny.[42] The measurements studied include height, weight, sitting height, chest circumference, chest width, chest depth, shoulder width, hip width, trunk length, surface area, stage of ossification of the bones of the wrist, and grip strength. As would be expected, breathing capacity shows some degree of relationship with each of these aspects of gross bodily size, though none is particularly significant when height and weight are held constant. The correlations with height range from 0.51 to 0.90 for the various age-sex groups used by the different investigators, while those for weight are from 0.39 to 0.80. Multiple correlations reported between breathing capacity and various combinations of measurements have been but slightly higher than the zero-order correlations given above. The highest are those reported by Metheny for children from 3 to 6 years of age. The multiple correlation of breathing capacity with age, height, and chest circumference was 0.88 for boys and 0.93 for girls.

Estimates of Breathing Capacity From Measurements of Bodily Size.—Height: Hastings[32] analyzed the relationship of breathing capacity to height at each age from 5 to 20 years for Nebraska school children. He presented tables giving the mean breathing capacity for each age and sex, classifying them in height groups of 2, 3, or 4 cm. at each age. Stewart[52] reported means for breathing capacity based on height for boys from 98 to 188 cm. and girls from 98 to 173 cm. His data were 2,400 observations on Minneapolis school children. He computed regression equations for each height group from which the breathing capacity of the individual might be estimated. Those for the smallest children are:

Boys, 98 to 118 cm. B.C. = 25.1 (Height in centimeters) – 1622
Girls, 98 to 113 cm. B.C. = 25.5 (Height in centimeters) – 1744

In a later paper[53] he found the range of deviation from this prediction to be ±35 per cent, half the deviations falling between ±8 per cent. Roberts and Crabtree[49] found that for white girls up to 140 cm. in height, each 5 cm. increase in height equalled 139 c.c. increase in breathing capacity; for boys up to 150 cm., each 5 cm. increase was matched by 167 c.c. increase in breathing capacity. Their subjects were Tennessee school children, 1,564 white and 1,254 negro.

Weight: In the study above described, Stewart[52] also presented regression equations for predicting breathing capacity from weight for the range of 33 to 153 pounds for males and 38 to 138 pounds for females. For the lightest children these equations are:

Boys, 33 to 48 pounds B.C. = 22 (Weight) + 263
Girls, 38 to 63 pounds B.C. = 29 (Weight) – 172

Sitting Height: For white girls whose sitting height was less than 85 cm., Roberts and Crabtree[49] found that breathing capacity increased 151 c.c. for each 2 cm. growth; for white boys, 171 c.c. Regression equations similar to those for height and weight were also presented for sitting height by Stewart.[52]

Boys, 53 to 61 cm.	B.C. = 41.5 (Sitting Height) – 1224
Girls, 51 to 61 cm.	B.C. = 48.6 (Sitting Height) – 1728

Surface Area: Emerson and Green[24] reported that a "very close relationship was found between vital capacity and surface area in children." Their data, however, do not bear out this observation, since the average ratio of breathing capacity to surface area ranges from 0.6 to 1.2 for their various height classifications of 354 children from 7 to 15 years of age. They used the Benedict and Talbot[9] surface area determination for most of their cases, but applied the Du Bois and Du Bois[21] formula to their older subjects. Edwards and Wilson have studied the surface area :breathing capacity relationship in three papers,[22, 23, 59] using the Du Bois and Du Bois surface area formula. In their first paper[59] they suggested that 1.87 liters per square meter was a desirable norm for both sexes. In their later papers[22, 23] they studied 440 children 6 to 16 years and concluded that this ratio should be interpreted in terms of bodily size. They therefore prepared a table showing breathing capacity per square meter surface area for each .10 sq. M. of surface area from 0.60 to 2.20, and supplemented this with a chart showing "normal" breathing capacity for surface area, with lines showing deviations from 10 per cent to 40 per cent.

Two or More Variables: Tables giving estimated breathing capacity of the individual based on sex, age, and height have been presented by Stewart and Sheets,[55] Stewart,[53] Baldwin,[8] and Metheny.[42] The values given by Stewart and Sheets are in metric units and cover the age range from 5 to 18 years. Their data were derived from the measurements of 2,400 Minneapolis school children, and the averages have been rounded and smoothed. The probable error of estimate from these tables is 8 per cent. Stewart's[53] tables are similar, but the values given are slightly different and are apparently the observed means. Stewart's publication also includes tables of breathing capacity for sex, age, and sitting height. Baldwin[8] assembled breathing capacity data from various sources and compiled age-height tables for breathing capacity in English and metric units for each sex, ages 6 to 19 years, based on 22,913 measurements of boys and 10,737 measurements of girls. These values tend to run about 5 cubic inches lower than those given by Stewart and Sheets. Metheny[42] presented tables of breathing capacity based on age, height, and sex for 205 children between the ages of 2 years, 6 months and 6 years, 5 months, drawn from the preschool laboratories of the Iowa Child Welfare Research Station. These values are somewhat higher than those given by Stewart and Sheets and Baldwin for the comparable ages, probably because the measurements were obtained with a specially designed children's spirometer. The standard error of estimate for these tables is about 7 per cent for boys and about 6 per cent for girls.

For distributions of quotients of the actual breathing capacity divided by the estimated breathing capacity from the table, Metheny found the standard deviation to be 13.4 per cent, and Baldwin found it to be 13 per cent.

Mental Relationships.—The literature on the relationship of breathing capacity to mental ability is both contradictory and confusing. But since no study has demonstrated that an unquestionably significant relationship, either positive or negative, exists, it would seem unprofitable for the purpose of this review to attempt a detailed analysis of the various findings reported.* Studies touching on this relationship for children under 10 years of age have been reported by Gilbert,[29, 30] Christopher,[13] Smedley,[51] De Busk,[16, 17] Baldwin,[7, 8] Berry and Porteus,[10] Garrison and Pullias,[27] Gates,[28] Abernethy,[1] and Metheny.[42] Both positive and negative correlations have been reported, but they have been uniformly low. From them the only conclusion which may be drawn is that if any relationship between breathing capacity and mental ability exists, it is very slight.

Breathing Capacity as a Clinical Measure.—There have been a number of opinions expressed relative to breathing capacity as a measure of general physical condition, and there have been a few attempts to measure this relationship in young children. Statements that a low breathing capacity is probably undesirable and may be an indication of subnormal physical condition have been made by Smedley,[51] Hastings,[32] Pyle,[47] Young,[62] Affleck,[2] and McCloy.[38, 39] Gates[28] found a correlation of 0.22 between breathing capacity and ratings of "physical vigor" made by five teachers well acquainted with the subjects. For 159 preschool age children Metheny[42] found no significant relationship between breathing capacity quotients (actual breathing capacity divided by breathing capacity quotients given in the age-height-breathing capacity tables previously described) and the general health status as measured by amount of absence, fatigue ratings by the teachers, and health ratings by the school nurse. However, for the seven children who were placed in the highest "health" category by all three criteria, the average breathing capacity quotient was 108.3, while for the eight children who were placed in the lowest "health" category by all three criteria, the average quotient was 91.8.

With reference to specific disease conditions the studies are somewhat more numerous.

Tuberculosis: Stewart and Sheets[55] recorded the breathing capacities of eighty-nine boys and seventy-eight girls, 6 to 15 years of age, at Lymanhurst and Trudeau Schools for Tuberculous Children. These suspected cases of tuberculosis showed deviations that were from 0 to 25 per cent below Stewart's norms, but a few exceeded the norm. Stewart and Sheets wrote: "On repeated examinations of individuals suspected of having tuberculosis there should be very little constant deviation in vital capacity below previous determinations. The occurrence of any permanent or progressive diminution in the vital capacity below previous records will give immediate clue to the development or extension of pathological processes within the chest. . . . Repeated measurement of vital capacity . . . is of prognostic value. A progressively decreasing vital capacity indicates the presence of an active and spreading lesion, whereas with an increasing or stationary vital capacity, the indications are the lesion present is either quiescent or is subsiding." In 1926 Stewart[54] continued the study, using 248 children from the Lymanhurst School. At admission to the school deviations from normal breathing capacity for height ranged from –12.4 to

*Descriptions of these studies and their principal findings have been given by Metheny.[42]

14.4 per cent, the average being –6.7 per cent for the girls and –7.6 per cent for the boys. After treatment, varying from 88 to 513 days, the average breathing capacity was –0.4 per cent for the girls and –3.0 per cent for the boys.

Friedman and Howes[26] measured the breathing capacity of 200 children 7 to 12 years old in the Prendergast Preventorium. All had been exposed to an open case of tuberculosis and showed positive Pirquet tests. Using the Stewart and Sheets norms, they found that "the vital capacity of each of the children at this institution was practically normal." Of nine children who were 15 per cent to 42 per cent below normal, they found that seven had heart disease and two had marked scolioses. "We seem justified in concluding as a result of this study that the estimation of vital capacity, in the quiescent case of hilum tuberculosis . . . is of no value in diagnosis . . . this conclusion does not necessarily apply to the diagnosis of active hilum tuberculosis showing clinical signs and symptoms."

Tracheobronchial Adenopathy: Wilson, Edwards, and Liss[61] studied the breathing capacity records of children 5 to 12 years of age with diagnosed tracheobronchial adenopathy, comparing them with their 1921 breathing capacity standards. They found a reduction of 15 to 42 per cent in breathing capacity for this group. In a group of supposedly "normal" subjects of the same age, "diminished vital capacity and roentgenologic evidence of tracheobronchial adenopathy were found in 16 per cent of apparently normal white subjects, and 84 per cent of apparently normal colored subjects." They concluded that "vital capacity is an aid in the diagnosis of tracheobronchial adenopathy."

Trunk Deformities: Flagstad and Kollman[25] followed the changes in breathing capacity of 100 subjects, 5 to 41 years old, during treatment for scoliosis. From these repeated readings and roentgenograms they concluded: "Vital capacity bears a definite relationship to the location, degree of curvature and rotation. . . . In mild and moderate cases, regardless of muscle power, vital capacity is within normal limits. In severe cases the vital capacity varies from 53 to 65 per cent." Hansson[31] took repeated measurements of breathing capacity on 564 patients with scoliosis and 441 with anteroposterior curves at the Hospital for the Ruptured and Crippled, New York City. Using Edwards and Wilson's standards, he found that 95.2 per cent of the scoliosis cases were below normal (i.e., below 99 per cent) in breathing capacity, and 26.2 were below 50 per cent. Of those suffering from paralytic scoliosis, 47.7 per cent had breathing capacities below 50 per cent of the standards. He wrote: "I have followed some of these children over long periods, i.e., three to six years, and I have always been impressed by the parallel improvement in appearance as shown by the photographs and the gradually increasing vital capacity. This has been accomplished by a combination of rest, proper nutrition, and therapeutic exercises. . . . I believe that in vital capacity determination we have an objective record of the child's health as far as heart and lungs are concerned."

Heart Disease: Wilson and Edwards[59] studied a number of children with diagnosed heart ailments, comparing their breathing capacity with that given in the 1921 standards. Eighty-eight children with heart disease and normal exercise tolerance had an average breathing capacity 2 per cent below the norm; thirty-six children with heart disease and diminished exercise tolerance averaged 26 per cent below the norm; while thirty-five potential cardiacs with normal exercise tolerance

showed average breathing capacity. They concluded: "Vital capacity measurements show a close relation to the heart functional capacity as gauged by the exercise tolerance."

Anemia: Parsons and Wright[46] reported a clinical study of five anemic children, 4 to 7½ years old. All showed markedly lower breathing capacities than did a control group of ten normal children when compared with Wilson and Edwards' standards. After treatment, three of the children increased their breathing capacity.

Hookworm: Roberts[48] studied 1,000 Alabama children, 6 to 18 years old, who were infected with hookworm. He found no marked differences between the averages obtained for this group and Stewart's norms for height, for weight, and for sitting height. Stiles and Graves[56] confirmed this finding in a study of 1,618 children, 6 to 17 years old. They further classified their subjects as to the sanitary provisions in their homes, but again found no difference in breathing capacity among the "sanitation groups."

Colds: Metheny[42, 63] collected daily records of the breathing capacity of twenty-two four-year-old children attending preschool during the winter months. She found that such records when combined with daily records of the grip strength were useful in "predicting" the occurrence of colds one or two days before any other symptoms were observable. The tetrachloric correlations between predictions and occurrence of colds averaged 0.70 for the various combinations of breathing capacity and grip strength records used. The author suggested, however, that the test scores were probably indicative of a condition of general fatigue and increased susceptibility rather than of the presence of an infection in the respiratory tract.

Miscellaneous Diseases: Wilson and Edwards[60] prepared a chart of clinical conditions revealing a diminished breathing capacity in children (Table IV). For each condition, repeated breathing capacity measurements were found to vary with the course of the disease and to be of prognostic value.

TABLE IV

CLINICAL CONDITION	PER CENT REDUCTION
Tracheobronchial adenopathy	20 to 30
Acute bronchitis	10 to 20
Bronchial asthma (between attacks)	10 to 20
Emphysema	0 to 30
Pleurisy with effusion	30 to 40
Lobar pneumonia	40 to 50
Pulmonary tuberculosis	30 to 50
Organic heart disease	
Normal exercise tolerance	0 to 3
Diminished exercise tolerance	20 to 35
Cardiac failure	35 to 80

Baldwin[5] noted that growth in breathing capacity was materially affected by the inception of and recovery from disease.

Metheny[42] presented case studies of seven children with diagnosed physical ailments which did not prevent them from attending preschool. For three subjects with chronic sinus infections the breathing capacity quotients were 93, 80, 77; for two with asthma, 84, 113; for one with a continual nasal discharge due to an allergic condition, 88; and one with

moderate scoliosis, 73. She commented: "These findings are by no means conclusive, since an equal number of cases might be cited of children having equally low breathing capacity and grip quotients in whom no symptoms of clinical significance have been noted. However, they do show that this small group of children who were definitely below par in health were also below the average of the group in both strength and breathing capacity."

SUMMARY

The studies discussed above would seem to indicate that breathing capacity is affected by certain respiratory and circulatory diseases and by deformities of the spine and thoracic cage; but it is difficult to say just how useful this relationship may be in the diagnosis and prognosis of these conditions. On this point the comments of Arnett and DeOrsay[3] made in 1937 concerning the use of the test with college students would appear to be equally pertinent for young children: "It would . . . be impossible to draw an arbitrary line and say beyond this line the variability is so great that the test is of no diagnostic value for any disease. . . . It would be possible if we knew the variations to be expected in any particular disease, to say for this disease the test might be helpful in students whose variations would not exceed such and such a figure. The diagnostic value of any given vital capacity will depend chiefly upon: (a) whether the vital capacity loss is great in comparison with previously observed variation; and (b) whether the magnitude of the vital capacity loss is commensurate with what is expected in the particular disease under consideration."

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Proceedings

TENTH ANNUAL MEETING OF THE AMERICAN ACADEMY OF PEDIATRICS

MEMPHIS, TENN.—Nov. 18-20, 1940

Round Table Discussion on Adiposogenital Dystrophy

Chairman: Josef Warkany, M.D., Cincinnati, Ohio
Associates: Sidney Farber, M.D., Boston, Mass.
Milan L. Logan, Ph.D., Cincinnati, Ohio
Secretary: Alvah L. Newcomb, M.D., Chicago, Ill.

CHAIRMAN WARKANY.—Among the abnormal so-called endocrine conditions encountered in children, the syndrome of adiposogenital dystrophy is most frequently observed. However, there is so much disagreement in regard to the existence, nomenclature, prognosis, and treatment of this condition that it seems worth while to outline briefly the subject to be discussed in order to make certain that we all will be discussing the same matter.

The term Fröhlich syndrome is often incorrectly used to describe obese adolescents. This usage is not correct, since the true Fröhlich syndrome consists of obesity, hypogenitalism, dwarfism, and symptoms of increased intracranial pressure, and is caused by a tumor. It is obvious that most of the cases of obesity in adolescents do not present this combination of symptoms. Since the prognosis and treatment of the Fröhlich syndrome differ completely from that of the usual form of obesity, it is necessary to differentiate sharply between these two conditions. In 140 cases of obese children observed by us, there was not a single true Fröhlich syndrome. The term hypopituitarism which is often employed is also unsatisfactory. It has not been proved that a lack of pituitary function causes obesity, but we know that it leads to retardation of growth. Since most of the obese adolescents are above average height, the term hypopituitarism is a misnomer, at least as far as the growth factor is concerned. That the syndrome under discussion cannot be explained simply on the basis of hypothyroidism has been re-emphasized by Bruch in recent publications. The term adiposogenital dystrophy, which we have chosen for our discussion, is merely descriptive and does not presuppose any etiologic or therapeutic standpoint. Even this term does not cover all the cases we wish to include in this group, since the sexual development is normal in the majority of cases. These cases of juvenile obesity are the ones seen so frequently in endocrine clinics.

The incidence of this condition may be illustrated by our experience, which probably resembles that of other similar clinics. In a period during which only six cases of sporadic cretinism and five cases of diabetes insipidus were seen, 140 cases of obesity were examined in our so-called endocrine clinic.

The clinical picture of the condition to be discussed is so well known to the participants of this discussion that it can be reviewed very briefly.

In children 6 to 15 years of age a peculiar obesity of the trunk, particularly in the mammary and abdominal regions, accompanied by an unusual gain in weight, is noted. Boys and girls are affected in equal numbers. These children

show a smooth, moist skin, rosy cheeks, and fine features. They have a small nose, a small mouth with fine lips, and relatively slender, tapering fingers. The blood pressure is a high normal. The Basal Metabolic Rate as done by routine laboratory tests is, in general, within normal limits. The Glucose Tolerance Tests show a variety of curves, like those of normal children.

The appetite is often unusual, sometimes even ravenous; but many children of this type do not eat more than average children of the same age. There is also a great variation in physical activity. In the majority of cases subjective complaints are absent. The family is often little concerned about the children's unusual development, since frequently the parents or some of their siblings have undergone a similar development and have later, according to their own statements, outgrown their abnormal condition. But the not too friendly remarks of the schoolmates, or the friendly advice of school nurses, teachers, or neighbors finally induce the parents to take the child to the physician or to the hospital "for glandular treatment."

Our physical examination may reveal nothing more than the picture described above, but in about one-half of these children a number of associated abnormal findings will be seen. These are repeated too often to be considered merely coincidental. These associated findings are partly of an endocrine nature and partly nonendocrine.

Some form of hypogenitalism was noted in 44 of 140 obese children in our clinic. Forty of these patients were boys and only 4 of them girls. Thus only 44 of 140 cases of obesity should be classified as adiposogenital dystrophies.

The abnormal height of many obese children has been mentioned already.

In about one-half of these children associated nonendocrine findings, such as abnormalities of the central nervous system and the eye, were present. Skeletal defects were noted in 10, and enuresis in 19 children of this group of 140 patients.

This variety of associated findings and their combinations suggest numerous syndromes, and it is hard to decide which combination should be given a special name and which should not.

Naturally we are interested in the etiologic factors which bring about this form of obesity. There is evidence that trauma, tumors, or inflammatory processes (encephalitis or syphilis) in the region of the pituitary gland or the diencephalon cause obesity and hypogenitalism in certain cases, but if we investigate the cases seen in our pediatric clinics, we find few children in whom such etiologic factors can be ascertained. Since we find a definite familial occurrence of the syndrome, we could say they belong to the idiopathic-familial type, or in other words we know nothing about the morphologic background in the majority of the children who have juvenile obesity.

In the treatment of juvenile obesity, brain tumor and syphilis must be ruled out before symptomatic treatment is begun, but, as indicated before, the majority of patients will have to be treated symptomatically.

An effective way of treating obesity in these adolescent children is the dietary treatment, which we use a great deal and with some success. However, we realize that this is neither the ideal therapy nor the final answer to the question of juvenile obesity. The endocrine treatment of obesity appeals much more to patient and physician and has been practiced a great deal; thyroid, anterior and posterior pituitary preparations and fractions, by mouth and by injection, have been used and found to be helpful. Whenever such a variety of preparations is said to be successful, we may suspect that none of them really influences the natural course of the abnormal condition. However, the fact that no hormone that will influence obesity has yet been found does not imply that such a hormone will not be known in the future. If we turn to the discussion of the treatment of hypogenitalism in obese children, we also encounter difficulties. It was pointed out previously that this

diagnosis is usually made in boys only. The treatment of undescended testes and of small genitalia should be considered separately. Opinions as to different preparations to be used and as to their dangers differ a great deal. The experience of every clinician who has used the effective sex hormones which are now available is of great importance and we should appreciate hearing from the clinicians in the audience about their experiences in this field.

We now plan to discuss certain questions which come up regularly in the diagnosis and treatment of adiposogenital dystrophy. It has become customary with many pediatricians to determine the basal metabolic rate in obese children and to direct their treatment according to the outcome of this determination. I should like to ask Dr. Logan what he thinks of this custom.

DR. LOGAN.—In considering the differences which may exist in the metabolism of children who become fat and those who maintain a normal rate of growth and fat accumulation, it is essential to point out that

1. The difference between the two may depend on a small disturbance in the balance between intake (appetite) and utilization.

For instance, if a child weighing 30 kg. who required an average intake of 1,800 calories per day for normal maintenance and growth consumed an average of 1,900 calories of food per day, his weight would increase 33 per cent above the normal in the course of two years if the excess was all converted to fatty tissue. If part was converted to other than fatty tissue, the increase in weight would be greater. In this illustration the excess of intake is only 5 per cent over utilization.

2. It is possible to conceive of three conditions which would result in fat accumulation:

a. Excessive intake with normal utilization.

b. Normal intake with subnormal caloric requirement.

c. Excessive intake resulting from an abnormally increased tendency to convert food to fat or a decreased tendency to utilize adipose tissue for energy.

The first might arise directly from psychologic factors as might also the second. An increased tendency to convert food to fat, however, is possibly an immediate result of changes in endocrine function which would manifest itself by an appetite in excess of energy utilization.

The determination of the basal metabolic rate is probably of little or no assistance in helping to decide between overconsumption and decreased utilization.

1. In the first place, the basal metabolism is calculated from the amount of oxygen consumed and CO_2 produced under a definite set of conditions, namely, postabsorptive and in rest, but does not tell the total expenditure of energy during twenty-four hours. The total energy expended in twenty-four hours may be 75 to 300 per cent more than that calculated from the basal values.

Even if one knew the caloric intake exactly, it would be difficult to detect 5 or 10 per cent differences in the daily expenditure of energy.

2. In the second place, it is impossible to establish normals, especially for children, which are valid within 10 per cent. In the illustration, which I gave above, 5 per cent disparity between intake and utilization is shown to be sufficient to cause adiposity. It is particularly difficult to establish normals for children of unusual proportions. The metabolism of children is usually compared on a basis of weight or on a calculation of body surface in which the height is the most important factor.

Talbot found that "total calories per weight" gave the best criterion for predicting the metabolism of children studied by him. De Brun found that the metabolism of children was proportional to the weight if they were not more than 35 per cent overweight. The metabolism rate for fatter children fell within the normal range when the calculation was based on the normal weight for their height plus one-third the excess weight. Topper and Mulier found that in 71 per cent of their cases

the basal metabolism of overweight children was within the normal range when compared with the predictions based on height, but that in 29 per cent it was more than 10 per cent above normal. In the same way the results of Bruch show that the metabolism of fat children shows a disproportion of high results when based on height and a considerable proportion of low results when based on weight or a calculation of surface in which the height is a major factor in the calculations.

The explanation of these deviations is probably twofold:

1. Adipose tissue utilizes energy. Fatty tissue contains a few cells. Determination of the metabolic rate of slices of adipose tissue with a microrespirameter indicates an O_2 consumption of 2 to 4 cu. mm. O_2 per milligram of protein (Ruska and Quastel). Based on the nitrogen content, this is almost as high as the O_2 consumption of other tissue; i.e., liver. This means that the cells of the fatty tissue use about as much energy as liver cells. When applied to the whole animal, the energy consumption would not by itself account for all the increase of basal metabolism of fat children above that of normal children of similar height.

2. The second cause is that the presence of fat in the body increases the basal oxygen consumption of the remainder of the protoplasmic mass.

This has been clearly shown by Benedict and Lee in comparing the heat production of fat and thin geese and mice. Per gram of fat and water free tissue, a thin mouse produced 0.59 calories, but a fat mouse produced 1.29 calories, or two and one-half times as many per day. Based on body surface the metabolism of the fat and thin mice were about equal.

The basal metabolism of the fat individual is therefore the resultant of two factors: (1) a faster metabolism of the nonfatty tissue, and (2) the small increment from the cells of the adipose tissue.

CHAIRMAN WARKANY.—We have stated that, from a clinical point of view, the syndrome of adiposogenital dystrophy cannot be explained simply on the basis of a lack of function of one of the endocrine glands. I should like to ask Dr. Farber whether pathologico-anatomic examinations of patients who had adiposogenital dystrophy point to any one organ as the seat of the syndrome.

DR. FARBER.—Our knowledge of the pathologic-physiologic background of adiposity and of disturbances that may be grouped under the general descriptive term of adiposogenital dystrophy is scanty. Founded originally on the localization and characterization of pathologic lesions in the cranial vault or in the endocrine system, such correlations explain but a small percentage of clinical pictures, which are best grouped under the term juvenile obesity. Conclusions drawn from clinicopathologic studies bearing on this question are not conclusive; their importance lies in the orientation of and the control of the validity of experimental work.

Adiposogenital dystrophy, with emphasis on the adiposity component of the picture, has been encountered in association with diseases of the central nervous system and of the adrenal cortex. Encephalitis, usually of the von Economo epidemic type, luetic meningoencephalitis, particularly with basilar localization, vascular lesions involving the diencephalon, and, most commonly, tumors arising at the base of the brain either in the pituitary or in the general region of the optic chiasm, and the floor of the third ventricle, have all been described as causes of pathologic adiposity. Although a disease which involves the brain in as unpredictably variable manner in regard to sites of involvement and the inconstancy in the severity of damage as does encephalitis would not be expected to permit exact correlations between localization of lesions and a symptom complex as striking as the adiposogenital syndrome, there have been enough examples studied to emphasize an important causal relationship of lesions of the hypothalamus in patients in whom no alteration in the pituitary could be demonstrated. The hypothalamus is one of

the most commonly involved areas in the brain in epidemic encephalitis; it should be mentioned, however, that adiposogenital dystrophy is a relatively rare sequel to the disease.

More precise information has been obtained and the original impetus for experimental work was derived from a study of tumors at the base of the brain in patients who presented the clinical picture under discussion. By way of preface, two points may be emphasized: (1) Not all tumors at the base of the brain are accompanied by adiposogenital dystrophy, nor by hypersomnia, diabetes insipidus, and other symptoms which might suggest disturbances in the hypothalamus. Indeed, tumors which on gross examination appear to have very much the same location may cause a striking clinical picture in one case and no evidence of hypothalamic disturbance in another; and (2) there is no relation between the histologic character of the tumor and the clinical symptoms we are dealing with here. Certainly no functioning tumors of the endocrine system, of the character of the islet adenoma of the pancreas, have been found in the central nervous system in association with the picture of adiposogenital dystrophy. The distortion of architecture, destruction of nerve tissue, and disturbance of normal function by gross pressure appear to be the modes of production of symptoms caused by tumors at the base of the brain rather than overemphasis of the normal function of an endocrine structure. It is understandable, therefore, that great variations may be noted in the symptoms associated with tumors either of one general type or of one general location. Despite early emphasis on the pituitary gland as the seat of tumors or disease processes responsible for adiposogenital dystrophy or what is so firmly entrenched in the literature as Fröhlich's syndrome, it is now generally agreed that adiposogenital dystrophy in a patient with a pituitary tumor does not occur unless the roof of the sella turcica is destroyed by the tumor and deleterious pressure effects produced upon the closely contiguous structures in the hypothalamus. Although it is possible, and even likely, that disturbance in growth and genital atrophy occur as a consequence of destruction of the anterior portion of the pituitary gland, the adiposity appears to occur only if the tumor interferes with the function of, or destroys a part of, the hypothalamus. Suprasellar tumors in general may produce adiposogenital dystrophy. These tumors include gliomas of the optic chiasm, tumors of the craniopharyngeal pouch, no matter what the histologic variant, and hamartomata (neoplasms arising as congenital malformations and lacking the power of invasive growth or metastasis) or gliomas of the floor of the third ventricle involving specifically the hypothalamic nuclei. Of considerable interest is this group of nonfunctioning tumors encountered recently in the floor of the third ventricle and associated with adiposity and sexual precocity, e.g., menstruation in a 2-year-old girl, precocious development of breasts, etc. No precise localization of altered, destroyed, or malformed hypothalamic nuclei is possible in such instances because of the size and variable extent of the tumor. The pituitary is normal on histologic examination. This finding illustrates the complexity of the picture caused by tumors in the hypothalamic region: adiposity and genital dystrophy may occur singly or together; diabetes insipidus may occur with either or both of these clinical pictures. Complete emaciation as a terminal event may be noted particularly when there is an expanding suprasellar tumor. The variability of the clinical picture associated with tumors in the region of the hypothalamus suggests that the areas governing pathologic adiposity, genital development, water metabolism, etc., are in intimate association, at least, from the anatomic point of view.

From clinicopathologic studies and early experimental work opinions varied concerning the relative importance of the pituitary, the hypothalamus, and what is known as the hypothalamico-hypophyseal system. The bulk of evidence obtained from experimental work suggests that the hypothalamus and not the pituitary is responsible for the adiposity, and even for the adiposogenital syndrome. More

specifically, it seems clear that if large lesions are placed bilaterally so as to destroy the middle group of hypothalamic nuclei, including the tuber cinereum and the lateral nuclear masses of the hypothalamus, adiposogenital syndrome will be produced in experimental animals whose pituitary glands are not disturbed. In animals so treated, the adiposogenital syndrome will make its appearance in an insidious manner with some regularity several months after the injury. In the rat, adiposity is produced following chemical or physical injury to the hypothalamus; complete hypophysectomy performed without injury to the hypothalamus produces disturbance in growth and genital development, but not adiposity. Still awaiting clarification is the experimental observation that the adiposity which may follow injury to the hypothalamus may be relieved by subsequent hypophysectomy.

The most recent experiments concerning the production of adiposity in the rat following hypothalamic lesions have been reported by Hetherington.* He found that obesity in the rat can be produced by lesions in the following locations provided that a considerable degree of symmetry in the location of the two lesions on the two sides be maintained: (1) ventromedial hypothalamic nuclei, the medial halves of the lateral hypothalamic areas, the ventral portions of the dorsomedial hypothalamic areas, and the ventral portions of the dorsomedial hypothalamic nuclei; (2) the caudal ends of the ventromedial and dorsomedial hypothalamic nuclei, the premammillary group of nuclei, and the adjacent parts of the lateral hypothalamic area. No histologic changes in the pituitary glands in animals so treated could be detected.

That the pituitary must not be ignored in this recent enthusiasm for the importance of the hypothalamus is demonstrated empirically: the most certain method of producing adiposity is to cause large lesions in both the pituitary and the hypothalamus. The possibility that the effects occasioned by the hypothalamic lesions are produced by an indirect action of disturbed hypothalamic function on the pituitary must still be entertained. Strong evidence of the existence of a pituitary factor in the adiposity problem comes from the study of patients with pituitary basophilism or basophilic adenoma of the anterior pituitary gland. A true example of this syndrome (Cushing's syndrome) has not been reported in children. With the exception of the bone lesions, the entire picture of Cushing's syndrome may be duplicated by a tumor in the adrenal cortex, even to the "buffalo" type of adiposity. In older individuals even a microscopic tumor composed of basophil cells of the pituitary gland is held responsible for the well-known syndrome of which the extraordinary adiposity is but one feature.

Obesity of the buffalo type may be present to an extreme degree in patients whose pituitary glands show no evidence of disease and in whom tumors of the adrenal cortex are found. Twenty-four such patients were selected from the literature recently by Marks, Thomas, and Warkany, who summarized the subject and included one patient they had observed personally. I have had the opportunity to study one marked example and one moderate one. Both were girls. The tumor in the first was a small adenoma of the adrenal cortex, composed in the main of mature cortex cells; the tumor in the second was a very large adenocarcinoma. It should be emphasized that adiposity is not a constant finding in patients with adrenal cortex tumors. Virilism in males, or evidence of masculinization in females, may dominate the picture. In two other patients without obesity but with evidence of virilism, the adrenal cortex tumor was of the fetal cortex variety. It is too soon to speak of one specific type of adrenal cortex tumor being associated with the adiposogenital syndrome or with marked obesity. The mechanism of the production of adiposity in such patients also is not understood. The hypothalamus or the pituitary appear to be of no importance, however, if one is to judge from the absence of histologically demonstrable lesions in those structures. It may be said

*Proc. Am. Physiol. Soc. April 15, 1941, Fifty-Third Annual Meeting, p. 138.

in summary that, with the exception of severe adiposity associated with certain examples of adrenal cortex tumor, the pathologic lesion underlying adiposity or adiposogenital dystrophy is to be found for the most part in the brain and may be associated particularly with involvement of the hypothalamus. From experimental work the tuber cinereum appears to be the area responsible for control of adiposity. The role of the pituitary must be left unsettled on the basis of present data. Earlier conclusions based upon the findings of tumor in the pituitary in patients with adiposogenital dystrophy led to the false conclusion that the pituitary was responsible, since the involvement of the closely contiguous hypothalamic nuclei was too minute a change to be appreciated. The mechanism of the production of marked obesity in Cushing's syndrome when associated with basophilic adenoma of the pituitary has not been elucidated. The discrepancy in experimental work may be explained on technical grounds, such as unrecognized injury to the hypothalamus or incompleteness of hypophysectomy.

CHAIRMAN WARKANY.—It is stated occasionally that the term endocrine obesity is not justified. Is this statement correct from a theoretical point of view?

DR. LOGAN.—If obesity is a consequence of endocrine dysfunction, then a logical approach to the problem would be to attempt to duplicate the conditions by alterations in the endocrine function of animals.

Probably the closest approach to success in this respect has come from experiments involving injury to the hypothalmus. I refer to the experiments of Smith, Foster, and Benninghoven, and Hetherington and Ranson. In the recent experiments of Hetherington, injury to both the hypothalamus and hypophysis was caused by chromic acid treatment. Consequently the animals were stunted. However, those animals which showed only injury to the hypophysis did not get fat. In Smith's tests on rats in which he claimed to produce injury to the hypothalamus but not to the hypophysis, the animals became fat but were not stunted.

The question of influence of the hypothalamus on the anterior pituitary is an important one because this gland by itself and by its effect on the adrenals is capable of making decided alterations in fat and carbohydrate metabolism.

The pituitary secretes several hormones involved in fat, carbohydrate, and protein metabolism. Not all the hormones have been separated and identified as single components. Therefore, if an extract produces two or more distinct effects in the body, one cannot say whether or not it is two hormones or a multiple effect of one hormone. From the effects produced in the body we recognize the action of the pituitary on fat and carbohydrate metabolism by the names glycostatic, glycotropic, thyrotropic, adrenotropic, diabetogenic, ketogenic, and growth hormones. The thyrotropic, adrenotropic, and glycostatic effects are due to distinct hormones which have been separated from the others. To what extent the other effects observed may be due to separate hormones may be suggested from the following discussion.

The adrenal cortex, like the pituitary, secretes a diabetogenic hormone; i.e., a substance which will produce glycosuria and hyperglycemia in normal animals. It has not been possible to completely untangle the individual contributions of these glands in respect to diabetogenic action because the pituitary secretes an adrenotropic substance and it is possible that the diabetogenic factors from the two glands have a synergistic action.

Removal of either the pituitary or the adrenal decreases the glycosuria and hyperglycemia of depancreatized animals (Houssay). Removal of either gland from normal animals causes a drop in liver and muscle glycogen and tends toward hypoglycemia if the animals are fasted (Cori and Cori and Long. This effect is in part due to a decided decrease in the rate of protein catabolism; i.e., rate of conversion of protein to carbohydrate. The glycogen of muscle and liver is low and the hypo-

glycemia probably is due to lack of available glucose precursor. The action of the two glands is not exactly similar however (Russel, 1938).

Hypophysectomy decreases the muscle glycogen immediately; adrenalectomy, only after several days (Russel and Bennet and Long). Administration of cortin or crystalline corticosterone or dehydrocorticosterone increases liver glycogen but not muscle glycogen (Russel and Craig, Corey and Britton, and Long and Katzin). On the other hand, pituitary extract will increase the muscle glycogen of an adrenalectomized rat.

In either case the increase of glycogen is accompanied by increased nitrogen excretion, indicating that accelerated protein breakdown accompanied the glycogen formation. There is some evidence to indicate that the liver proteins are the ones broken down by the adrenal cortical substances. In the absence of the pituitary the availability of the body fat for oxidation is probably markedly decreased.

Administration of a suitable pituitary extract to mice or guinea pigs causes the transfer of fat from the depots to the liver and increases ketonemia and ketonuria. This is not mediated through the thyroid. Although adrenalectomy may decrease ketonuria, it does not decrease the ketonemia nor did it completely prevent the mobilization of the fat.

Although there is not very good direct proof for it, the mobilization of fat under these conditions is probably a concomitant of increased oxidation of fat. Increased fat in liver is accompanied by low respiratory quotient.

Much evidence has accumulated to indicate that fat is not directly oxidized in muscle but must be changed to something else (probably ketone bodies) in the liver before utilization.

The pituitary also secretes a hormone (or hormones) which causes an animal (i.e., dog) to become insensitive to insulin (glycotropic action). It increases the rate of insulin secretion and tends to prevent the depletion of muscle glycogen during fasting (glycostatic action). This hormone, if it is one hormone, is not diabetogenic in itself and can be distinguished from the diabetogenic hormone because it is more heat stable (Young).

The diabetogenic effects of the pituitary or adrenal (that is, glycosuria, hyperglycemia, and increased protein catabolism) are only evident when the influence of these secretions predominates over insulin action. Insulin has a protein sparing action, meaning that it favors anabolism or protein synthesis. Increased nitrogen excretion is not observed when the insulin output is sufficient to take care of increased pituitary or adrenal action. Increased action of all three glands in a harmonious balance may be the so-called growth hormone. At least increased weight has been observed in most of the experiments involving administration of the pituitary hormone to normal animals until the stimulation was pushed to such an extent that the pancreas was exhausted and degenerated (Young).

The role of the pituitary-adrenocortical system in the deposition of fat will become clearer when the pituitary hormones have been separated from each other in pure form. Particularly this applies to the question of whether the ketogenic hormone is an entity different from the diabetogenic hormone.

Gonadotropic principle from pregnancy urine (antuitrin-S) resulted in genital development but had no influence on the obesity.

That castration causes hypertrophy of the pituitary and adrenals and predisposes toward fat accumulation is well known. Recently Korenchevesky has found that although testosterone will decrease the hypertrophy of the pituitary of the castrated rats, either estradiol or testosterone will decrease the fat accumulation of the castrated rats.

I have outlined briefly the known influences of the pituitary on fat metabolism, fully appreciating that our present knowledge is not sufficient to answer the question of the etiology of so-called adiposogenital dystrophy.

My object is rather to indicate the points at which our knowledge should be extended.

A small change in the balance of ketogenic and diabetogenic factors may make the difference between normal growth and fat accumulation, but we need to have more knowledge of the action of the individual hormones on the tissues. Particularly we need more knowledge as to what extent glycogen formation and fat accumulation resulting from administration of the hormones is due to decreased oxidation and how much is due to increased formation from protein. This suggests that careful balance experiments in which the whole animals are analyzed after treatment with pure hormones may add important facts to our knowledge.

DR. H. L. BIBBY, KINGSTON, N. Y.—What is the value of blood serum cholesterol determinations in obesity?

DR. LOGAN.—The interpretation of serum cholesterol determinations is attended with some difficulties.

In the first place, various methods employed give different results for the amount of cholesterol present in serum. Second, determinations carried out by procedures considered to be dependable indicate that normally the blood cholesterol can vary rather widely for reasons which have not been determined. Definite increases have usually been observed when there was good reason to expect that the level of fat transport was high. Fasting, hypothyroidism, and nephrosis are among the conditions not necessarily connected with adiposity which may yield high blood cholesterol values. Whether significant variations from the normal have been observed in obesity is doubtful.

DR. R. N. ANDREWS, MANKATO, MINN.—Is it worth while to use a diet in idiopathic juvenile obesity?

CHAIRMAN WARKANY.—Although I doubt that the diet influences the natural course of the condition, I believe it is worth while to prescribe a reducing diet in idiopathic juvenile obesity. We have found it best to begin with a diet of 800 calories. Such a diet should not be continued too long, but children often lose 10 to 20 pounds within four to six weeks on such a diet. We realize that it is frequently difficult to keep an outpatient on a reducing diet. A certain intelligence and cooperation of the parents is indispensable, and it is not always easy to overcome the financial difficulties caused by the extra costs of a special diet in poor families. The cooperation of the child has to be secured by different methods, which vary a great deal in different cases. We found it advantageous to put several obese members of the family, and they can usually be found without difficulty, on the reducing diet. We explain to the child why the diet should be observed and how it is composed. If the child can take an active part in the planning of the diet it is often accepted without complaints and the whole procedure may be considered as a kind of game. After six weeks the diet is relaxed and gradually increased, and finally the child is allowed to eat ad libitum. Frequently we find that the food intake of children who had been on the diet does not return to the high level which was customary before the treatment. Accordingly the weight of the child will remain below the initial weight. It is obvious that such cases are physically and psychologically benefited by the dietary treatment.

QUESTION.—What is the connection between lipocaic and obesity?

DR. LOGAN.—No connection has been shown between lipocaic and obesity. Lipocaic, if it is not identical with choline, apparently acts like choline in facilitating the transport of lipins from the liver. Evidence has been presented to indicate that

it speeds up the synthesis and breakdown (that is the turnover) of phospholipins in the liver. The accumulation of fat in the liver resulting from inadequate intake of lipocaic-like substances is at the expense of the fat of the adipose tissue.

DR. L. DE VEL, GRAND RAPIDS.—I have gained the impression that the obesity in some of these children definitely dates back to a surgical operation, such as tonsillectomy or herniotomy, or some acute illness. Have you gained a similar impression?

CHAIRMAN WARKANY.—In our series of cases only very few developed after operations or acute diseases and even in these cases we were not convinced that a causal relationship existed between the preceding health disturbance and the obesity. However, I should like to point out that other observers suspected a causal connection between removal of adenoid tissue and the appearance of adiposogenital dystrophy (Repaci, 1939). It is thought that a pharyngeal hypophysis may be removed together with the adenoid tissue.

QUESTION.—Do you use glandular preparations in the treatment of hypogenitalism of obese children?

CHAIRMAN WARKANY.—We have used chiefly gonadotropic (APL) preparations in obese boys who showed signs of genital underdevelopment. In a number of cases in which the testes were not descended, descent of the testes was observed after a few injections of gonadotropic hormone. We also tried to stimulate the growth of the penis and the testes with gonadotropic preparations and some patients seemed to improve when this treatment was continued for many months. However, it should be considered that such lengthy experiments are of little value if not well controlled, since a spontaneous growth of the genitalia often can be observed in the course of half a year or a year in similar boys. There is no evidence that testosterone is superior to gonadotropic hormone in the treatment of undescended testes (Steinitz, 1939).

DR. BIBBY.—Are any pituitary preparations used by mouth?

CHAIRMAN WARKANY.—It seems that pituitary preparations are still administered by mouth but there is no evidence that they are effective in any way.

ELEVENTH ANNUAL MEETING OF THE AMERICAN ACADEMY OF PEDIATRICS

BOSTON, MASS.—OCTOBER 9-11, 1941

Minutes of the General Meeting

The eleventh annual meeting was called to order by President Richard M. Smith at 2:15 o'clock.

The following were introduced to the convention: Dr. Guillermo Sanchez, of Guatemala City, Guatemala, and Dr. Raoul Ortega, of Santiago, Chile.

Dr. Caulfield read the report of the historian.

The report of the executive board was taken up in detail and approved.

The report of the treasurer was approved.

A supplementary report of the Committee on Central and South American Scholarships was made, and the Chairman, Dr. Henry F. Helmholz, stated that we have contact with five South American countries, namely, Brazil, Chile, Argentina, Uruguay, and Venezuela, and with two Central American countries, Cuba and Mexico. Three scholarships have been granted and the doctors were introduced at the meeting:

Dr. Fernando Madero, Mexico City
Dr. Julio Meneghello, Santiago, Chile
Dr. Gustavo Cardelle Penichet, Havana, Cuba

Dr. Joseph S. Wall of the Committee on Legislation stated: "State Chairmen are asked to hold themselves in readiness to assist the Committee on Legislation in favoring through their representatives in Congress any national legislation which is beneficial to pediatrics or pediatricians and to oppose any legislation deemed harmful, when such aid may be requested by the Committee on Legislation."

The Committee on Contact Infections suggested the following tentative program:

"1. All physicians are urged to apply tuberculin tests routinely to all patients of all ages. It is desired that all physicians use the tuberculin test on everyone.

"2. Reapply tuberculin tests periodically to all who have reacted negatively to previous tests.

"3. Perform routine and periodic clinical laboratory tests in the case of all patients who are sensitive to tuberculin.

"4. Segregate all patients with infections until they are no longer a source of contagion."

The Committee on Problems of the Fetus and the Newborn Infant stated that it was trying to get out standards for the care of the newborn in maternity hospitals.

The Nominating Committee then reported that Dr. Lee Forrest Hill of Des Moines, Iowa, was nominated to replace Dr. A. Graeme Mitchell (deceased) as Chairman for Region III. Dr. Hill was elected. Dr. Borden S. Veeder was elected Vice-President (President-Elect) of the Academy.

Resolutions of thanks were voted for the Hotel Statler, the Boston Chamber of Commerce, the local committee, and Dr. Martmer, Assistant Secretary. It was also voted to send a letter of greeting to Dr. E. C. Mitchell, who could not attend because of illness.

The meeting adjourned.

News and Notes

The October number of the *Print Collectors' Quarterly*, published in Kansas City, contains an article "Pottlesmith on the Amateur Art Critic" by the late Dr. A. Graeme Mitchell. Written in a charming delightful style "Doctor Pottlesmith," well known to all of Dr. Mitchell's friends, reveals some of himself, his philosophy, and his love of art. The Quarterly can usually be found in the larger public libraries, and the library departments of art museums.

The Nineteenth Annual Meeting of the American Orthopsychiatric Association, an organization for the study and treatment of behavior and its disorders, will be held at the Hotel Statler, Detroit, Mich., on Feb. 19, 20, and 21, 1942. Copies of the preliminary program will be sent upon request. A registration fee will be charged for nonmembers.

The American Board of Pediatrics announces the following examinations for 1942:

March 30-31, Philadelphia, Pa.
April 22, Los Angeles, Calif.
May 13, Cleveland, Ohio

These dates precede the meetings of Regions I, IV, and III of the Academy, respectively. The written examination for those taking the oral examinations at these times will be held locally, under a monitor, on February 14.

A fourth examination will be given in the fall at the time of the annual meeting of the Academy of Pediatrics early in November. The written examination for those taking this oral examination will be given approximately six weeks preceding the date of the meeting.

Attention is again called to the increase in the fee for those applying after May 31, 1942.

Through the courtesy of Station WRUL, a broadcast in Spanish was made on October 9 to South and Central America by Dr. Meneghello, of Santiago, Chile, who is now studying at Harvard under an Academy Fellowship.

A translation of Dr. Meneghello's broadcast is as follows:

The opportunity which has been offered to me to address the Spanish American countries is due to the kindness of the American Academy of Pediatrics of the United States of America, a society which is holding its annual meeting in Boston today.

We have had the honor of being charged, on this significant occasion, with bringing into contact once again the pediatrists of South and Central America and those of North America.

It is not without profound satisfaction that we have accepted this pleasant task, for it gives us an opportunity to express our admiration for the marked advances which American Pediatrics has made and permits us as well to indicate the role which the American Academy of Pediatrics has played in those advances.

Fifty years ago there did not exist in North America a real movement for the well-being of the child. Pediatrists dedicated their efforts rather to the sick than the well child. However, in the short time which has passed, the revolution has been complete and the result is, if not definitive, excellent. Such progress required the disinterested and determined support of able men. To those men we owe the

enormous progress of pediatric knowledge, the stimulation of investigation, the effective cooperation in the elaboration of standards of medical education and practice, and the encouragement of the organization of innumerable bureaus dedicated to the improvement of the well-being of the child.

Thus, since 1910, the growth and development of pediatrics has been one of the most remarkable phenomena of North American Medicine. Indeed, on going over the extensive bibliography on the subject, one may ascertain that it has played a most important role in the total growth of clinics and hospitals and has occupied a predominant place in the structure of medical education and practice, and also has often indicated the path in the varied social relations of medicine. This last aspect of its progress, which was initiated at the beginning of this century, has been continued with constant acceleration during recent periods. Today the rapid growth of the movement directed toward the well-being of the mother and the child and its relations with modern pediatrics are topics widely enough popularized that the general public knows them in some detail.

American Pediatrics exhibits the record of the preservation and protection of the life and health of children. The American Academy of Pediatrics has kindled the vigor and vision of this progress. Indeed, this institution aims fundamentally to create reciprocal and friendly relations among all professional persons and organizations which are interested in the health and protection of the child. Moreover it strives to make physicians concern themselves with the movement for the well-being of the child and take an active part in it. With these purposes committees exist which bring it into touch with philanthropic centers and with schools of Public Health and Mental Hygiene. It has three other committees which give guiding aims to medical education, indicate norms in hospitals and dispensaries, and, finally, advise in the education of nurses specializing in pediatrics.

The American Academy of Pediatrics establishes and maintains the highest possible standard for pediatric investigations and stimulates contributions of scientific literature pertaining to pediatrics.

Its objectives, as may be seen, are purely altruistic. Now, not content with the spread of its doctrines within and without the country, with an unflagging zeal it has desired to add a further link in its long chain of good works, offering to its colleagues of Spanish America the opportunity to complete their studies in its midst. Thus at the end of 1939 a committee of fellowships for South and Central America was set up which approached the principal universities and industrial centers concerned, with the object of procuring the necessary financial assistance. The following offered their generous aid: The Proctor Foundation of the University of Cincinnati, the Mayo Foundation, Mead Johnson and Company, Abbott Laboratories, Quaker Oats Company, M and R Dietetics, and The Wisconsin Alumni Research Foundation. At the same time, the principal universities of the United States, with the same generous spirit as the American Academy of Pediatrics, opened their doors to physicians selected in the different countries of South and Central America, offered them their best facilities, and are thus permitting that best interchange among people, the spiritual. The universities which have expressed their willingness to receive candidates are Johns Hopkins University, Harvard University, the University of Chicago, the University of Minnesota, the Chicago Children's Hospital, the University of Cincinnati, the Mayo Clinic, the University of Iowa, Western Reserve University, Yale University, the University of Illinois, the University of Wisconsin, Vanderbilt University, the University of California, the University of Rochester, and the University of Pennsylvania.

As soon as these fellowships were arranged, the committee approached the Societies of Pediatrics in Cuba, Mexico, Chile, Brazil, Uruguay, Argentina, and Venezuela, suggesting that each of them should indicate a committee to take charge

of the selection of candidates. These committees are directed by Drs. Enrique Baz-Dresh and Luis Berlanga in Mexico; Drs. Anjel Aballi and Serafin Falcon in Cuba; Drs. Ramon Arana and Alfredo Larguia in Argentina; Drs. Gonzalo Moraga and Adalberto Steeger in Chile; Drs. Pasrtor Oropeza and Ernesto Vizcarrondo in Venezuela; Drs. Conrado Pelfort and Jose Bonaba in Uruguay; and Drs. Pinnheiro Cintra and Paula Souza in Brazil. Dr. Henry Helmholz, the chairman of the committee of Spanish American fellowships, has asked me to state that the American Academy of Pediatrics has in its grant at present only seven fellowships, which is the only reason that the rest of the countries of Spanish America are not included.

The present speaker, appearing before the American Academy of Pediatrics as a representative of Chile, experiences great satisfaction in being able to bear witness to the true spirit of fraternity which he has met, and takes advantage of the opportunity to express his appreciation of the kindnesses which have been shown him. He does not wish to silence his conviction that it is just this path of mutual knowledge which will bring about better and better from day to day the complete and desired understanding of all the countries of this vast continent.

In spite of the little time which has passed since I came to one of the best equipped hospital centers for diseases of children, the Children's Hospital of the University of Harvard, I have been able to perceive its excellent organization. It is not an opportune moment to enter into the details of this matter, but I consider it necessary to make it known that the Spanish Americans are privileged in having the opportunity to live at this source of useful and real teaching for our countries.

At this moment when the flower of North American pediatrics is assembled, holding its annual meeting, the American Academy of Pediatrics sends through me the warmest greetings to all who dedicate their lives to the care and protection of infancy and childhood.

DR. JULIO MENEGHELLO
October 9, 1941.

The following were certified by the American Board of Pediatrics at the examination in Boston, Mass., Oct. 7 and 8, 1941:

George Edgar Roy Anthony, M.D., Flint, Michigan
Joseph Avin, M.D., Brooklyn, N. Y.
Edward W. Beasley, M.D., Chicago, Ill.
Helen Wynyard Bellhouse, M.D., Thomasville, Ga.
Beatrice Bergman, M.D., New York, N. Y.
Charles Bradley, M.D., East Providence, R. I.
David Hale Clement, M.D., Buffalo, N. Y.
Wallace A. Clyde, M.D., Birmingham, Ala.
Stuart Starnes Corbin, M.D., Burlington, Vt.
R. Edward Corley, M.D., Burlington, Vt.
William Henry Crawford, M.D., Upper Darby, Pa.
Bernard S. Denzer, M.D., New York, N. Y.
John Devlin Donnelly, M.D., Ardmore, Pa.
William Harrison Eberle, M.D., Ashtabula, Ohio
Ernest M. Eichhorn, M.D., Flint, Mich.
Henry M. Eisenoff, M.D., New York, N. Y.
Herman W. Farber, M.D., Richmond, Va.
Joseph Andrew Forbrich, M.D., Chicago, Ill.
Albert A. Frank, M.D., Malden, Mass.
Martin J. Glynn, Jr., M.D., New York, N. Y.
Jack R. Hild, M.D., Houston, Tex.
Oliver William Hill, Jr., M.D., Knoxville, Tenn.

Marion Hotopp, M.D., Dover, Del.
Arthur E. Karlstrom, M.D., Minneapolis, Minn.
Weston M. Kelsey, M.D., Westport, Conn.
Irwin J. Klein, M.D., Brooklyn, N. Y.
Hedwig Koenig, M.D., New York, N. Y.
William O. Kopel, M.D., Syracuse, N. Y.
Lawrence Kuskin, M.D., Brooklyn, N. Y.
Seymour Kyman, M.D., Cleveland, Ohio
Dorothy M. Lang, M.D., White Plains, N. Y.
Robert Barrett Lawson, M.D., Chapel Hill, N. C.
Eleanor Isabel Leslie, M.D., Evanston, Ill.
Sherman Little, M.D., Philadelphia, Pa.
Clarence L. Lyon, M.D., Spokane, Wash.
Thomas Hislop McEachern, M.D., Ann Arbor, Mich.
Paul John McGuire, M.D., Homestead, Pa.
Thistle M. McKee, M.D., Albany, N. Y.
Edwin F. Merolla, M.D., Brooklyn, N. Y.
Herbert C. Miller, Jr., M.D., New Haven, Conn.
Walter Louis Mitchell, Jr., M.D., Newark, N. J.
Clifton Tate Morris, M.D., Baton Rogue, La.
Harry L. Mueller, M.D., Winchester, Mass.
Antonio M. Ortiz y Ortiz, Santurce, P. R.
Irving S. Pearlman, M.D., Brooklyn, N. Y.
Martin A. Quirk, M.D., Red Bank, N. J.
Joseph Raffetto, M.D., Asbury Park, N. J.
Frances Elba Myrtle Read, M.D., Baltimore, Md.
Eleanor Johnson Rector, M.D., Akron, Ohio
Franklin Norwood Rogers, M.D., Manchester, N. H.
Harold S. Rubin, M.D., Hempstead, N. Y.
Victor Rudomanski, M.D., Brooklyn, N. Y.
Bernard Schwartzman, M.D., St. Louis, Mo.
John F. Shaul, M.D., Bloomfield, N. J.
David W. Sherwood, M.D., Boston, Mass.
H. H. Shuman, M.D., Fitchburg, Mass.
Harry Shwachman, M.D., Boston, Mass.
Benjamin Silberg, M.D., New York, N. Y.
Lawrence B. Slobody, M.D., New York, N. Y.
Arthur H. Spreen, M.D., Cincinnati, Ohio
Nathan Bill Talbot, M.D., Boston, Mass.
Vincent G. Tosti, M.D., Ridgewood, Queens, N. Y.
Katherine Ver, M.D., Dayton, Ohio
Ethel Walker, M.D., Baltimore, Md.
A. Alvin Wolf, M.D., Chicago, Ill.
J. Andreas Wunderlich, Jr. Pittsburgh, Pa.
Mary Zeldes, M.D., Chicago, Ill.

A total to date of 1,784 have been certified by the Board.

At a meeting of the Regional Committee of Region II held in St. Louis on November 11, it was decided to hold the 1942 regional meeting at the time of the meeting of the Southern Medical Association at Richmond, Va. Tentatively the Academy meeting will be held on Wednesday and Thursday afternoons with the Section on Pediatrics meeting of the Southern Medical Association on the same mornings.

Calendar of Pediatric Meetings in 1942

March 30-31	Mon.-Tues.	**Examination, American Board of Pediatrics** (Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago, Ill.)	**Philadelphia**
April 1-3	Wed.-Fri.	**Meeting, Region I, A.A.P.** (Dr. Julian Lyon, 40 Llanfair Rd., Ardmore, Pa.)	**Philadelphia** (Bellevue-Stratford Hotel)
22	Wed.	**Examination, American Board of Pediatrics**	**Los Angeles**
23-25	Thur.-Sat.	**Meeting, Region IV, A.A.P.** (Dr. Norman Nixon, 1136 W. Sixth St., Los Angeles, Calif.)	**Los Angeles** (Ambassador Hotel)
April 30-May 1-2	Thur.-Sat.	**Annual Meeting of the American Pediatric Society** (Dr. Hugh McCulloch, 325 N. Euclid Ave., St. Louis, Mo.)	**Skytop, Pa.** (Skytop Club)
13	Wed.	**Examination, American Board of Pediatrics**	**Cleveland**
14-16	Thur.-Sat.	**Meeting, Region III, A.A.P.** (Dr. Edward A. Wishropp, 10 Peterboro St., Detroit, Mich.)	**Cleveland** (Hotel Cleveland)
June 10-12	Wed.-Fri.	**Section on Pediatrics, A.M.A.** (Dr. Hugh Dwyer, 315 Alameda Rd., Kansas City, Mo.)	**Atlantic City**
Nov. 3	Tue.	**Examination, American Board of Pediatrics**	**Chicago**
4-7	Wed.-Sat.	**Annual Meeting of the American Academy of Pediatrics** (Dr. Clifford Grulee, 636 Church St., Evanston, Ill.)	**Chicago** (Palmer House)

The name under each meeting is that of person in charge of the program and arrangements. Hotel reservations should be made directly with the hotel.

Book Reviews

Developmental Diagnosis. Normal and Abnormal Child Development. Arnold Gesell, M.D., and Catharine S. Amatruda, M.D., New York, 1941, Paul B. Hoeber, pp. 447. Price $6.50.

This volume from the Yale Clinic of Child Development may be regarded not only as the capstone of the series of important monographs on child development by Dr. Gesell and his associates, but also as typifying the development of pediatric thought and trends in recent years. To those who have had the feeling that growth and development was somewhat of a theoretical matter of little clinical importance, the book will be an eye opener. Growth and development has a relation to pediatrics somewhat analagous to that of anatomy to surgery, and hence the importance of pioneer studies of this nature. Perhaps when pediatric history is written the outstanding contribution of the present period will be this emphasis upon the growth and development of the child as a subject for study, and volumes such as this will be regarded as the background of pediatric research in the truest sense. This in no way disparages the importance of the splendid studies along etiologic and therapeutic lines which have been coming from our pediatric laboratories and clinics during this same time.

The authors in Part I classify certain norms of development at eight fixed chronological age periods: 4, 16, 28, and 40 weeks, 12 18, 24, and 36 months. These developmental norms are divided into and classified in four groups: Motor, Adaptive, Language, and Personal-Social behavior, the picture formed from all four giving the total developmental picture. A relatively simple examination, in which observation is the most important factor, is outlined to determine whether the infant meets these norms, lags behind, or is in advance of them. The ratio between the age of maturity as shown by the examination and the chronologic age is termed the D. Q. or Developmental Quotient. In Part II there is a discussion of defects and deviations in development due to amentia, endocrine disorders, convulsive disorders, cerebral injury, etc. The chapter on sensory handicaps due to deafness and visual defects is particularly good. A discussion of environmental retardation and of the clinical aspects of child adoption end this section. Part III has to do with Diagnosis and Guidance, and Developmental Supervision. An appendix contains added details as to examination technique and equipment, charts, and record forms. The illustrations are excellent and the twelve pictures of each age norm of development almost tell the story without the text. The book is essentially clinical in nature and practical, and belongs to the "must" group of books for the pediatrician's library and desk. No pediatrician, no matter how much he thinks he may know of the growth and development of the infant and young child, will fail to find in this book a lot of material and knowledge that will help him in his daily work.

Handbook of Communicable Diseases. Franklin H. Top, M.D., M.P.H., St. Louis, 1941, The C. V. Mosby Co., pp. 682. Price $7.50.

This book is what it purports to be, a text for handy reference and not an exhaustive treatise. The author is the Director of the Division of Communicable

Diseases of the Herman Kiefer Hospital and Department of Health in Detroit and throughout has drawn on a large personal experience. Certain chapters such as those on "Nursing Care" in the Hospital" and "Home Management have been written by his associates as have the chapters on "Tuberculosis," "Syphilis," and "Gonorrhoea." It differs from most pediatric handbooks of a similar nature in that it is much broader in scope and includes such subjects as "Leprosy," "Undulant Fever," and "Psittacosis." Section I is made up of chapters with a general discussion of such subjects as Infection and Immunity, Serum and Serum Reactions, Epidemiology, Specific Methods of Prevention, Nursing in Hospital, and Home Management. Section II discusses thirty-nine specific diseases which the author has attempted to group according to the common portal of entry: respiratory tract, skin, gastrointestinal, etc. The subjects are discussed in a clear, concise way with due recognition of uncertain and disputed facts. It is a very satisfactory text and is fully abreast of recent developments and therapeutic advances. The text is well illustrated with seventy-two illustrations in black and white and ten superior color plates.

Infantile Paralysis, 1941. A Symposium Delivered at Vanderbilt University. National Foundation for Infantile Paralysis, New York, 1941, pp. 239.

A series of six lectures on various phases of infantile paralysis, under the auspices of the National Foundation, was given at Vanderbilt University in April, 1941, by outstanding workers and authorities in their particular subject. These six addresses published together in this volume are "History" by Paul F. Clark of the University of Wisconsin; "Etiology" by Charles Armstrong of the U. S. Public Health Service; "Immunological and Serological Phenomena" by Thomas M. Rivers of the Rockefeller Institute; "Pathology and Pathogenesis" by E. W. Goodpasture of Vanderbilt; "Epidemiology" by John R. Paul of Yale; and "Treatment and Rehabilitation" by Frank R. Ober of Harvard. All are splendid critical reviews of our knowledge of these respective phases of infantile paralysis and of the present-day trends of research. The book is excellently edited and one of its most important parts is a bibliography of thirty-six pages containing 575 references to literature arranged alphabetically by authors. The references in all the essays refer to this and the duplication of chapter bibliographies is avoided. To this is added an index. Any one interested in any way in the subject of poliomyelitis will find the volume not only interesting but invaluable. The National Foundation for Infantile Paralysis has again shown its broad vision in its fight against infantile paralysis by making this important scientific material available to physicians in such a readable form.

Civil Defense Measures for the Protection of Children. Report of Observations in Great Britain, February, 1941. Martha M. Eliot, M.D., Associate Chief, Children's Bureau, U. S. Dept. of Labor.

In February of this year a Civil Defense Mission of five members was sent to Great Britain to observe and report on British experiences and methods for civilian defense. To Dr. Eliot was assigned the part relating to the child and child protection. Her report thoroughly reviews past British experiences and the changes in methods which have taken place since 1939. It is based on personal observation, contact with British workers in this field, and a vast number of reports and bulletins made or issued by such agencies as the Ministry of Health, Board of Education, and numerous civilian organizations engaged in war work. It is comprehensive in scope and deals with such matters as the protection of children under bombardment, the effect of war and the attendant dislocation of normal fam-

ily life on the child, the evacuation of children with the many resulting problems of health, education, feeding, housing, and the like, and with the problems of special groups. Comment on the evacuation of children since the chaotic situation in September, 1939, with the subsequent changes in plans which have of necessity developed leads logically to the final conclusions and recommendations of the report.

In general the recommendations are the development of a plan under Government authority elastic enough to meet the different possibilities that might arise. It should furnish measures for protection under bombardment and for the dispersal and evacuation of children from congested areas at times of attack or danger. Not only should the detailed plans be ready, but it is necessary to have funds available to carry out the plans should they have to be put in operation. This plan should include the designation of danger areas and corresponding reception areas of safety; an inventory of resources as regards facilities for housing, health, education, etc.; a study of the competency of local authorities to meet the needs; the preparation of detailed evacuation plans with the designation of official agencies responsible for carrying out the plan; the strengthening of local agencies where necessary.

The report stresses the importance of a trained prepared personnel. It recommends an immediate study and listing of physicians available for emergency needs, the training of pediatricians and obstetricians in public health by short courses, the extension of public health training to 1,000 nurses during the coming year, the organization of a civil nursing reserve, and the special training in child welfare of 200 additional social workers. The report stresses the important work done by organizations of volunteer women workers, and recommends that an organization of Child Care Aids be formed to work under the supervision of professional workers, made up of women who have served not less than 100 hours in a nursery school, child health center, or a child-caring agency.

The report, a mimeographed volume of nearly 200 pages, is of importance to all engaged in any form of child health and welfare activities, as well as to State and Social Committees of National Defense.

EDITOR'S NOTE:

An account of her trip was given by Dr. Eliot at the Region I meeting of the Academy last March at New Haven. This appeared in the May issue of the JOURNAL **18**: 691, 1941. Her Address at the Annual Academy Meeting in Boston in October will be found in this issue.

Infant Nutrition. McKim Marriott, M.D., and P. C. Jeans, M.D., ed. 3, St. Louis, 1941, The C. V. Mosby Co. Pp. 475. Price $5.50.

This well-known text by the late Dr. Marriott has been completely revised by his former associate, Dr. Jeans, of Iowa. A comparison chapter by chapter with the first edition which appeared in 1930 and the second in 1935 shows the important progress which has been made in our knowledge of infant nutrition during the last decade. Changes, some quite extensive, will be found in practically every chapter. The chapter on Vitamins is almost double in extent. Dr. Jeans' revision was a needed one, and while basically retaining the material and content of the earlier editions, he has definitely left his own impress on the present text. The new edition will undoubtedly continue to hold its place as a most satisfactory text on infant nutrition for the student and practitioner.

In Defense of Children. Bert I. Beverly, M.D., New York, 1941, The John Day Co., Inc. Pp. 233.

In Defense of Mothers. Leo Kanner, M.D., New York, 1941, Dodd, Mead & Co., Inc. Pp. 167. Price $2.00.

The publication of these two books with their alluring titles makes a comparison inevitable. Both are on the same subject, both are for the same public, both are by men with vast experience in the field of child psychiatry and guidance who are recognized as having the right to speak with what is termed "authority," and both are decidedly better than any previous books in a similar category. Despite these striking coincidental similarities, the two books are vastly different in form and style, approach the subject from opposite points of view, and each distinctly presents the attitude and philosophy of the respective author as to what is most important in preventing and ironing out the problems which arise in the growing up of children. To the reviewer when these differences in approach are reconciled the basic attitude of the two toward the subject is much the same, a statement with which each author will in all probability violently disagree. For example, the following from Dr. Beverly's book aptly states much of the theme of Dr. Kanner's book.

"Great harm may be done, under some such name as psychology, by those who try to solve the problems of others by telling them how they should think, feel, and act."

Dr. Beverly, with his long experience in pediatrics and psychiatry at the Children's Memorial Hospital in Chicago, approaches the subject from the standpoint of the child. His theme is that children are quite a different type of human being from adults; that there is a certain "normal" behavior at a given level of development and that behavior changes with the developmental curve. Standards of behavior normal for a 12-year-old child should not be expected from an 8-year-old, and adult standards are not normal at any time. In fact the difficulties that arise are considered by Dr. Beverly to be largely the result of attempting to expect and enforce adult standards of conduct and behavior on the child. Lying, stealing, and masturbation, for example, the author considers as normal in a 9-year-old boy, and he is apprehensive of honesty, obedience, and truthfulness in a boy that age, as he considers them abnormal traits at that time. His attitude is well summed up in a paragraph from the final chapter. "Mental health throughout life can be assured to those babies who are normal at birth . . . if parents, physicians and teachers have a clear conception of growth and development from birth to maturity and follow a few general principles in rearing them." A rather difficult assertion to defend, although no one would quarrel with this as an aim of mental hygiene and the progress which has been made. Dr. Beverly's effort to build up his volume on a growth and developmental basis is a sound method of approach, even though many will doubtless disagree with some of the positiveness of his statements at times. The author stands for and back of the child all the time, and hence the derivation of the title. It is a safe and sound volume to recommend to parents and is as sincere a book as we have read in a long time. Perhaps the chief criticism is that it is somewhat repetitious, which takes away from the interest.

The subtitle of Dr. Kanner's book, "How to Bring Up Children in Spite of the More Zealous Psychologists," gives a clue to its contents. The delightful humorous and at times ironic method of presentation will doubtless be objectionable to some. Dr. Kanner has likewise had a vast experience with children at Johns Hopkins Hospital. He obviously has been impressed by the anxieties of parents who have come to him with their problems and by their bewilderment over various schools of psychologic thought and theory as regards child behavior and guidance. While attacking, largely by ridicule, these various schools, the author imparts a clear lot of sound psychology. Certain chapters as the one entitled "The Great God Unconscious" would seemingly bring excommunication to the author from many psychiatric groups,

although he will find the pediatricians in agreement with this attitude towards the psychoanalysis of children. The chapter on sex education is also sound and is quite in agreement with Dr. Beverly's ideas.

Both books can be recommended. Perhaps Dr. Kanner's would be the choice for the overanxious parent who has a muddled mind from reading specialized books, magazine columns, attending parental education courses and the like, while Dr. Beverly's is more adapted for the parent we encounter so often who is trying to lead his own life over again in the child, and who is demanding standards of conduct beyond those normal for the child at a given age. The pediatrician, among whose chief functions is that of a teacher, should read both. In the same way that the newer books for parents on the physical growth and development of children are getting away from rigid formulations and didactic statements, so these books on child guidance are improving, and common sense is supplanting an era of pseudoscience and theory.

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CURRENT PEDIATRIC LITERATURE

1940-1941

HUGH McCULLOCH, M.D.
St. Louis, Mo.

PART II
THE JOURNAL OF PEDIATRICS
NOVEMBER, 1941

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CURRENT PEDIATRIC LITERATURE

1941

Being a List of Books, Journals,
Reports and Other Memoranda,
Chosen as Useful Material for
Essential Acquisition and Collateral Reading,
Selected From Publications During
1940 and 1941,
Prepared for Physicians and Others
Interested in the Field of Pediatrics

EDITED AND ANNOTATED

by

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and

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PREFACE

Questions are asked frequently by busy doctors about pediatric books that are good to read and that can be recommended, either the regular textbooks or, usually, books on special subjects. These inquiries may be based on an intensified interest in a special situation which requires investigation, although often the interest arises from a desire to acquire information of a more general character. The inquiries come from those who are either not familiar with the most recent publications or have no easy access to a good source of books in their community. It is also true that the increasing volume and complexity of medical literature makes it more difficult for anyone to locate quickly and completely all the desirable literature in a specialized subject. The *Quarterly Cumulative Index Medicus* now provides the means of locating original articles published in journals, and a great many of the new books are also included in this Index. Since pediatrics has such a broad horizontal interest in many other specialties, the pediatrician finds himself necessarily searching his own field and also digging into the literature of these specialties, which further increases the difficulties for a busy person to keep up with and be familiar with all the literature even though the sources for locating it are well known.

It is also clear that difficulties will arise on the part of those who write and who publish the literature in related fields of medicine and other sciences in making their material known to and available to all the special groups which may be interested. Writers and publishers in the fields of education, psychology and sociology, for example, feel that their work has a broader application than to just that one group and that their publications should be available to many others, pediatricians as well. This seems largely a matter of distribution, and of bridging the gap that exists between the two groups who are trying to reach each other.

For these reasons I have prepared this List of Books and Journals covering current pediatric literature. The undertaking has been approved by the Executive Board of the American Academy of Pediatrics and is a part of the constructive policy of the Academy to develop interest in the field of pediatric education and training. The books will have been shown in the Scientific Exhibit at the Annual Meeting of the Academy. The List has been made up personally but has been submitted to the Editorial Board of *The Journal of Pediatrics*, the official publication of the Academy, and has the general approval of that Board. Individual items on the List may be questioned, for any list of this sort would vary slightly with the individual compiling it. The List does not

suggest the content of one's reading but gives notice of new additions to the literature and what books are available on a given subject. It is a "Council accepted" list of books.

The List has been prepared with the following general plan in mind: First, a book has been selected in every field of medicine which is related to pediatrics and which has been published during 1940 and 1941 in English. Only those books have been included which are representative, which have been examined critically, and which can be recommended. No attempt has been made to include all the books published in this period, nor has an attempt been made to indicate which is the better of two or more books of a kind. Texts, reference works and monographs, have been included. Second, books have been selected from those published before 1940 that are so unique, useful and outstanding in their particular field as to be essential for reference and that should be on hand in a pediatric library. Books in this group are principally textbooks related to the basic sciences or the only one of a kind in a very special field. Such books will be retained on the List from year to year until they are replaced by ones which are better. No books are included in the List which are older than ten years. Third, books which are considered indispensable for individual ownership and reading, which should be in every pediatrician's personal library and kept up to the current edition, are indicated on the List as being essential by the symbol (E) placed at the end of the annotation. All others are of lesser general interest and are indicated as collateral (C). These may be of greater interest to readers in special fields and would be considered essential by them. The more important function of this list is to call attention to this group of books since those which are essential are surely well known. Four, each book selected is definitely of interest to pediatricians in the field of education, research or practice.

The List of Journals has been chosen in the same way as the books. Those containing critical reviews and abstracts have been given first position in each subtitle, particularly those in the basic sciences, since the average pediatrician does not have the time, nor usually the interest, to explore the journals publishing original articles in these fields. It is suggested that such review or abstract journals in the basic sciences should be included in the list one would select for personal use according to one's interest in such fields.

The journals chosen will vary naturally with the accessibility of medical libraries. Medical school, hospital, medical society, or group libraries will provide an opportunity to see journals which need not then be included in one's own personal list for ownership. In the case of journals of internal medicine the List is large enough to include the better and standard American ones and should insure a close contact of pediatrics to this related field of clinical and experimental medicine.

No foreign journals except those in pediatrics have been included. One or more pediatric foreign journals containing English texts or summaries and abstract features have been selected from each country. The Journals from Central and South American republics are included to familiarize readers in this country with them.

The annotations are given to describe the nature of the book rather than to criticize it. For the most part, the discussion is chosen from the author's preface to indicate the purpose for which the book was written. In certain instances no annotation is recorded since it is assumed that the intent and nature of the book is clear from its title and is so well known that no further explanation is necessary. Following the annotation, reference is made to a review of the book if such has appeared in *The Journal of Pediatrics, The American Journal of Diseases of Children,* or *The Journal of the American Medical Association.* Reviews appearing in other journals have not been included.

Notices of deaths of authors which have appeared in these same journals are indicated in the references in the authors index.

The subtitles of book classification are somewhat arbitrary. They follow in general that of the *Quarterly Cumulative Index Medicus* with only slight variations. A subtitle is indicated only when a book in that classification is available.

Grateful acknowledgment is made of valuable assistance from the Executive Board of the Academy and from each member of the Editorial Staff of *The Journal of Pediatrics.* Acknowledgment is made also to the many authors and publishers of the books and journals on the List for their kind cooperation and generosity in supplying copies for examination and exhibit. Further acknowledgment is made also to The C. V. Mosby Company for assistance in preparing the List and in its publication. The author has no commercial interest in the preparation of the List, the arrangement of the exhibit, the publication and distribution of the List, or the sale of books.

HUGH MCCULLOCH

325 North Euclid Avenue
St. Louis, Mo.
September, 1941

LIST OF BOOKS AND JOURNALS*

1940-1941

1. ADOPTIONS

An Adopted Child Looks at Adoption, Prentice, Carol S., D. Appleton-Century Co., Inc., New York, 1940, 222 pages.

Written by one who was an adopted child and who has adopted a daughter to round out her family of two sons. Offers the viewpoint of both the adopted child and the adopted parent. Discusses also the legal and sociologic aspects of the subject. (C)

The Adopted Child, Gallagher, Eleanor Garrigue, The John Day Co., Inc., New York, 1936, 291 pages.

Contents confined to the subject of the white child adopted in infancy. Not a scientific treatise and is more than a review of the history and procedure of adoption. A guide for anyone who wants to adopt a child and for those who already have adopted children; a handbook for social workers, adoption agencies, doctors, students of sociology, and all others interested in the welfare of children. (C)

Problems and Procedures in Adoption, Colby, Mary Ruth, Department of Labor, Children's Bureau, Publication No. 262, Division of Public Documents, U. S. Government Printing Office, Washington, D. C., 1941, 130 pages.

A study of adoption procedures in those states where a state department has been given statutory responsibility for making investigation of adoption petitions. Describes the extent to which safeguards for the protection of adopted children set up by legislation or through administration have been effective. Factual material to show who the children are who are being adopted; how they found their way into the homes of those petitioning for adoption; and what differences there are in standards, practices, and volume in the several states in which the study was conducted. (C)

2. ALLERGY

Allergy in Clinical Practice, Thomas, J. Warrick, M.D., et al., J. B. Lippincott Co., Philadelphia, 1941, 325 pages. (E)

The Journal of Allergy, Alexander, Harry L., M.D., Editor, The C. V. Mosby Co., St. Louis.

For the Society for the Study of Asthma and Allied Conditions and the American Association for the Study of Allergy. Original articles, reports, proceedings, abstracts. Current volume, 12. Bimonthly. (C)

*The books and journals included in this List have been shown in the Scientific Exhibit at the Eleventh Annual Meeting of the American Academy of Pediatrics, Boston, Mass., October 9, 10 and 11, 1941.

3. ANATOMY

Davis' Applied Anatomy, Muller, George P., M.D., et al., J. B. Lippincott Co., Philadelphia, ed. 9, 1934, 717 pages.

The construction of the human body considered in relation to its functions, diseases, and injuries. Aims to treat surgical principles through the medium of anatomical relations. As the book is not on operative surgery, operative descriptions are merely sketched and the anatomical relations conjoined. (E)

Developmental Anatomy, Arey, Leslie Brainerd, Ph.D., W. B. Saunders Co., Philadelphia, ed. 4, 1941, 612 pages.

Presents detailed studies and information on the human embryo, bearing on the subject of growth and development. Presented from the standpoint of regions and organs. (C)

Journal of Morphology, McClung, C. E., Managing Editor, Wistar Institute of Anatomy and Biology, Philadelphia.

Devoted to the publication of original researches on animal morphology and physiology, including cytology, protozoology, and the embryology of vertebrates and invertebrates. Original articles only. Current volume, 69. Bimonthly. (C)

Anatomical Record (Journal), Boyden, Edward A., Managing Editor, Wistar Institute of Anatomy and Biology, Philadelphia.

For the American Association of Anatomists and the American Society of Zoologists. For the prompt publication of concise, original articles on vertebrate anatomy, preliminary reports, technical and critical notes of interest to anatomists, and short views of noteworthy publications. Original articles only. Current volume, 80. Monthly. (C)

The American Journal of Anatomy, Smith, Philip E., Managing Editor, Wistar Institute of Anatomy and Biology, Philadelphia.

Devoted primarily to the interests of anatomy as taught in medical schools of the United States and the development of scientific anatomy in these schools. Researches only. Current volume, 69. Monthly. (C)

4. ANOMALIES

Congenital Cleft Lip, Cleft Palate and Associated Nasal Deformities, Vaughan, Harold Stearns, M.D., Lea & Febiger, Philadelphia, 1940, 210 pages.

Contains important chapters on embryology, anatomy, and physiology of the structures related to cleft lip and palate; also on the physiology of speech and deglutition. J. Pediat. **17**: 141, 1940; Am. J. Dis. Child. **60**: 461, 1941. (C)

Congenital Malformations, Murphy, Douglas P., M.D., University of Pennsylvania Press, Philadelphia, 1940, 98 pages.

A study of parental characteristics with special reference to the reproductive process. J. Pediat. **16**: 677, 1940.

5. ANTHROPOLOGY

Multiple Human Births: Twins, Triplets, Quadruplets and Quintuplets, Newmann, Horatio Hackett, Ph.D., Doubleday, Doran & Co., Inc., New York, 1940, 214 pages.

Gives systematic and reliable information for the general reader about twins and super twins. J. Pediat. **18**: 287, 1941. (C)

American Journal of Physical Anthropology, Hrdlička, Aleš, M.D., Editor, Wistar Institute of Anatomy and Biology, Philadelphia.

For the American Association of Physical Anthropologists. Original papers on anthropology in general; researches in evolution, man's origin; human ontogeny; variations in man; heredity; eugenics, demography; the American Indian and abnormal classes. Papers on anthropometry and the methods of anthropology also appear. Current volume, 28. Quarterly. (C)

6. BACTERIOLOGY

A Textbook of Bacteriology, Zinsser,* Hans, M.D., and Bayne-Jones, Stanhope, M.D., D. Appleton-Century Co., Inc., New York, ed. 8, 1939, 1018 pages.

Presents fundamentals of bacteriology and immunology and the application of this knowledge to the understanding and control of infectious diseases. Coordinates the knowledge provided by the basic sciences with technical and practical information. (E)

Bacteriological Reviews (Journal), Cohen, Barnett, Editor, Williams & Wilkins Co., Baltimore.

For the Society of American Bacteriologists. Current volume, 5. Quarterly. (C)

7. BIBLIOGRAPHY

1940 Year Book of Pediatrics, Abt, Isaac A., M.D., and Abt, Arthur F., M.D., The Year Book Publishers, Inc., Chicago, 1941, 590 pages.

The progress in pediatrics is analyzed and carried forward, year by year, in this clinical handbook. (C)

Pediatric Bibliography, Mitchell,* A. Graeme, M.D., Monograph of the Society for Research in Child Development, Vol. 6, Serial No. 27, No. 1, National Research Council, Washington, D. C., 1941, 119 pages. J. Pediat. **18**: 842, 1941. (E)

Child Development Abstracts and Bibliography (Journal), Ciocco, Antonio, Chairman, Editorial Board, National Research Council, Washington, D. C.

For the Society for Research in Child Development. Current volume 15. Bimonthly. (E)

American Journal of Diseases of Children, Abstract Section, American Medical Association Press, Chicago. (E)

*Deceased.

Quarterly Cumulative Index Medicus (Journal), Fishbein, Morris, M.D., Editor, American Medical Association Press, Chicago.

Current volume, 29. Quarterly. (C)

8. BIOGRAPHY

L. Emmett Holt, Pioneer of a Children's Century, Duffus, R. L., and Holt, L. Emmett, Jr., M.D., D. Appleton-Century Co., Inc., New York, 1940, 295 pages.

Recites well the personal life of one who was an important figure in pediatrics and indirectly the story of the development of pediatrics in this country. (E)

I Remember: The Autobiography of Abraham Flexner, Flexner, Abraham, Ph.D., Simon and Schuster, Inc., New York, 1940, 414 pages.

Among other things describes, from the inside, a whole epoch in the history of American medicine and American medical education. (C)

9. BIOLOGY

Man on His Nature. The Gifford Lectures, Edinburgh, 1937-1938, Sherrington, Sir Charles Scott, O.M., The Macmillan Co., New York, 1941, 413 pages.

A great biologist expresses his philosophy of the change in our knowledge of life, contrasting his attitude towards the origin and significance of life with that held four centuries ago. (C)

Biological Abstracts (Journal), Flynn, John E., Editor in Chief, University of Pennsylvania Press, Philadelphia.

For the Union of American Biological Societies. A comprehensive abstracting and indexing journal of the world's literature in theoretical and applied biology, exclusive of clinical medicine. Current volume, 18. Ten issues annually. Published also in five sections: (a) General biology; (b) experimental biology; (c) microbiology, immunology, and parasitology; (d) plant science; and (e) animal science. (C)

Quarterly Review of Biology (Journal), Pearl,* Raymond, Ph.D., Editor, Williams & Wilkins Co., Baltimore.

Original articles, book reviews. Current volume, 16. Quarterly. (C)

Human Biology (Journal), Pearl,* Raymond, Ph.D., Editor, Johns Hopkins Press, Baltimore.

Original articles, notes, recent literature. Current volume, 13. Quarterly. (C)

Proceedings of the Society for Experimental Biology and Medicine (Journal), Editorial Board, The Griffith Press, Utica, N. Y.

Original articles. Current volume, 47. Nine issues annually. (C)

*Deceased.

10. BIOMETRY

Introduction to Medical Biometry and Statistics, Pearl,* Raymond, Ph.D., W. B. Saunders Co., Philadelphia, ed. 3, 1940, 537 pages.

Written for the medical reader primarily. Illustrations of method are chosen mainly from that field. The principles of biometry are being applied in the fields of biology and medicine by those who are not, and never will be, specialists and who need a simple explanation of the basic elements of the subject. J. A. M. A. **116:** 175, 1941. (C)

11. BONES

Bone Growth in Health and Disease, Harris, Henry A., Oxford University Press, New York, 1933, 248 pages.

The biologic principles underlying the clinical, radiologic and histologic diagnosis of perversions of growth and disease in the skeleton. (C)

12. BUSINESS SIDE OF PRACTICE

How to Make Your Budget Balance, Harwood, E. C., and Fowle, Helen, American Institute for Economic Research, Cambridge, Mass., 1941, 143 pages. (C)

How to Avoid Financial Tangles, Masteller, Kenneth C., American Institute for Economic Research, Cambridge, Mass., 1941, 159 pages. (C)

Your Income Tax, and How to Keep It Down, Lasser, Jacob Kay, C.P.A., Simon and Schuster, Inc., New York, 1941, 128 pages.

Written for the average man and woman. But even those who ordinarily employ tax counsel will benefit by it. (E)

13. CARDIOLOGY

Heart Disease, White, Paul D., M.D., The Macmillan Co., New York, ed. 2, 1937, 744 pages.

The first part deals with the examination of the patient and the analysis of his symptoms and signs; the second discusses the etiologic types and causes of heart disease; the third deals with the structural changes present in the heart and great vessels; and the fourth takes up disorders of function. According to present knowledge and operations one should think not only of these two diagnoses, structural and functional, but add, as perhaps most important of all, a third; namely, etiologic. (E)

Clinical Heart Disease, Levine, Samuel A., M.D., W. B. Saunders Co., Philadelphia, ed. 2, 1941, 495 pages.

Presents in a simple form the important aspects of the diagnosis, prognosis, and treatment of heart disease. Can be looked upon as a personal or individualistic treatise, containing the author's views on most of the common cardiac problems arising in ordinary medical practice. (C)

*Deceased.

The Electrocardiogram in Congenital Heart Disease, Schnitker, Maurice A., M.D., Harvard University Press, Cambridge, Mass., 1940, 147 pages.

A study of 109 cases, 106 with autopsy. Analyzes not only the electrocardiograms but also, and most important, the symptoms and signs of the more common clinical types of cardiac anomalies: A real contribution to our understanding of this pediatric problem. (C)

American Heart Journal, Smith, Fred M., M.D., Editor, The C. V. Mosby Co., St. Louis.

For the American Heart Association. Original articles, abstracts, book reviews. Current volume, 22. Monthly. (C)

14. CHEMISTRY

Biochemistry of Disease, Bodansky,* Meyer, M.D., and Bodansky, Oscar, M.D., The Macmillan Co., New York, 1940, 684 pages.

A systematic presentation of the biochemical aspects of the various diseases, arranged according to clinical entities. Since it is through this relation to particular clinical situations that the physician usually experiences his interest in biochemistry, the arrangement of the biochemical material in accordance with clinical entities is pertinent. General presentations and descriptions of laboratory methods are not included in the text. (E)

Mineral Metabolism, Shohl, Alfred T., M.D., American Chemical Society, Monograph Series, Reinhold Publishing Corporation, New York, 1939, 384 pages.

Describes the role of the minerals in the structure and function of the human body. J. Pediat. **17**: 708, 1940. (C)

Chemical Reviews (Journal), Noyes, W. Albert, Jr., Editor, Williams & Wilkins Co., Baltimore.

For the American Chemical Society. To provide authoritative critical reviews of recent research in theoretical chemistry. They do not necessarily recount the original researches of the authors, nor are they primarily addressed to the specialist who is already working in the field of the specific review. Current volume, 27. Bimonthly. (C)

Journal of Biological Chemistry, Editorial Board, Williams & Wilkins Co., Baltimore.

For the American Society of Biological Chemists. Is designed for the prompt publication of original investigation of a chemical nature in the biologic sciences. Current volume, 139. Monthly. (C)

Journal of Physical Chemistry, Lund, S. C., Editor, Williams & Wilkins Co., Baltimore.

For the American Chemical Society and the Faraday Society. Original articles only. Current volume, 45. Monthly. (C)

Journal of Organic Chemistry, Small, Lyndon F., Editor, Williams & Wilkins Co., Baltimore.

Original articles only. Current volume, 6. Bimonthly. (C)

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*Deceased.

15. COMMUNICABLE DISEASE

Handbook of Communicable Diseases, Top, Franklin H., M.D., The C. V. Mosby Co., St. Louis, 1941, 682 pages.

Includes not only the usual children's "contagious" diseases, but also pneumonia, tuberculosis, syphilis, gastrointestinal infection and infestations, and virus diseases. A useful reference work in a specialized field. (E)

A Manual of the Common Contagious Diseases, Stimson, Philip M., M.D., Lea & Febiger, Philadelphia, ed. 3, 1940, 465 pages.

Discusses common contagious conditions in a practical way. Material drawn from Willard Parker Hospital but shows application of these principles in private practice. J. Pediat. **16:** 822, 1940; Am. J. Dis. Child. **60:** 1234, 1940. (E)

16. DENTISTRY

Dentistry for Children, Brauer, John Charles, D.D.S., Higby, L. B., D.D.S., and Boyd, Julian D., M.D., The Blakiston Co., Philadelphia, 1939, 373 pages.

A field which is not studied enough by pediatricians. At least one should understand the dental problems of a child and be able to talk intelligently with parents and to cooperate with the dentist. The book has a good chapter on the "business side" of dentistry. J. Pediat. **17:** 141, 1940. (C)

Textbook of Dental Anatomy and Physiology, Wheeler, Russell C., D.D.S., W. B. Saunders Co., Philadelphia, 1940, 415 pages.

Covers the gross anatomy of the teeth; the alignment of the teeth in the jaws; their occlusion during the various jaw relations. Contains much basic knowledge for reference. (C)

17. DERMATOLOGY

Skin Diseases in Children, MacKee, George M., M.D., and Cipollaro, Anthony C., M.D., Paul B. Hoeber, Inc., New York, 1936, 345 pages.

There are a number of cutaneous affections that are seen only in infancy and childhood; a few are peculiar to adolescence. Many of the chronic adult dermatoses begin in early life. By detecting these conditions in the early stage of evolution much can be done to prevent future suffering and disfigurement. Most of the skin diseases common to adults are also encountered frequently in children, but the symptom complex is likely to be modified by factors peculiar to youth. (E)

18. DEVELOPMENT

The Postnatal Development of the Human Cerebral Cortex. Vol. I. The Cortex of the Newborn, Conel, J. LeRoy, Harvard University Press, Cambridge, Mass., 1939, 114 pages.

A general survey of the postnatal development of the nerve cells in the normal human cerebral cortex for the purpose of observing what changes occur in the morphology of the neurones as development in behavior of the growing child proceeds. The cortex of the newborn infant is described. (C)

Developmental Diagnosis: Normal and Abnormal Child Development, Gesell, Arnold, M.D., and Amatruda, Catherine S., M.D., Paul B. Hoeber, Inc., New York, 1941, 447 pages.

Medical education has sometimes been criticized for neglecting the normal characteristics of man at the expense of the pathologic. If we acknowledge that development as well as disease falls within the province of medicine and public health, the criticism has some force. The strong trend toward preventive and supervisory medicine obliges us to understand assets as well as liabilities, favorable as well as unfavorable symptoms. The pediatrician and the general practitioner have to deal increasingly with relatively well children. The developmental processes determine in equal measure the reaction patterns of the intact and the defective child. The present volume is primarily devoted to methods of diagnosis and to the applications which rest securely on diagnosis. (E)

19. DIABETES MELLITUS

The Treatment of Diabetes Mellitus, Joslin, Elliot P., M.D., Root, Howard F., M.D., White, Priscilla, M.D., and Marble, Alexander, M.D., Lea & Febiger, Philadelphia, ed. 7, 1940, 783 pages.

A specialized subject in the field of general medicine. The pediatric phases of this are discussed well by Dr. White. The chief author has long shown a keen interest in children. J. A. M. A. **116:** 1033, 1941. (C)

Clinical Diabetes Mellitus and Hyperinsulinism, Wilder, Russell M., M.D., W. B. Saunders Co., Philadelphia, 1941, 459 pages.

Limited to clinical consideration only. Includes not only the subject of diabetes mellitus but also disturbances of insulin secretion. (C)

20. DIAGNOSIS

Method of Assessing the Physical Fitness of Children, Jenss, Rachel M., Sc.D., and Souther, Susan P., M.D., Department of Labor, Children's Bureau, Publication No. 263, Division of Public Documents, U. S. Government Printing Office, Washington, D. C., 1940, 121 pages.

The study has been devoted to the problem of evaluating several methods of assessing physical fitness which have been in more or less widespread use in this country during recent years. J. Pediat. **18:** 427, 1941. (E)

Diagnostic Procedures and Reagents: Technics for the Laboratory Diagnosis and Control of the Communicable Diseases, American Public Health Association, New York, 1941, 352 pages.

The laboratory methods by which the biology of each communicable disease is recognized. Establishes a scientific basis for the recognition of the incipient diseases and the formulation of other practices necessary for their control. Represents the opinion of selected workers specialized in the various subjects. J. A. M. A. **116:** 2731, 1941. (C)

Clinical Diagnosis by Laboratory Methods, Todd,* James Campbell, M.D., and Sanford, Arthur Hawley, M.D., W. B. Saunders Co., Philadelphia, ed. 9, 1941, 841 pages.

A working manual of clinical pathology. (C)

*Deceased.

21. DICTIONARIES

American Illustrated Medical Dictionary, Dorland, W. A. Newman, M.D., W. B. Saunders Co., Philadelphia, ed. 19, 1941, 1647 pages. (E)

Webster's Collegiate Dictionary, Neilson, William Allen, Editor in Chief, G. & C. Merriam Co., Springfield, Mass., ed. 5, 1936, Merriam Series, 1274 pages. (E)

22. DIETETICS

Proximate Composition of American Food Materials, Chatfield, Charlotte, and Adams, Georgian, Department of Agriculture, Circular No. 549, Division of Public Documents, U. S. Government Printing Office, Washington, D. C., 1940, 91 pages.

Includes average values on the composition of an extension list of natural and processed foods of animal and plant origin. To be supplemented by the earlier tables of Atwater and Bryant. (C)

23. DIRECTORIES

American Medical Directory, American Medical Association Press, Chicago, ed. 16, 1940, 2648 pages.

A register of legally qualified physicians. (C)

Directory of Medical Specialists, Titus, Paul, M.D., Columbia University Press, New York, 1939, 1573 pages.

For the Advisory Board for Medical Specialists. J. Pediat. **16**: 676, 1940. (E)

A Standard Classified Nomenclature of Disease, Logie, H. B., M.D., Editor, American Medical Association Press, Chicago, 1935, 476 pages.

For the National Committee on Nomenclature of Disease. (C)

Social Work Year Book, 1941, Kurtz, Russell H., Russell Sage Foundation, New York, ed. 6, 1941, 793 pages.

A concise encyclopedia which undertakes to report the current status of organized activities in social work and in related fields. A most unusual book. (C)

24. ECONOMICS, MEDICAL

Medical Care—Economic and Social Aspects of Health Service (Journal), Davis Michael M., Editor, Williams & Wilkins Co., Baltimore.

For the Committee on Research in Medical Economics. To disseminate formation concerning the economic and social aspects of medicine. To promote a scientific approach to the subject and to stimulate practical action by the profession and the public in their common interest. Current volume, 1. Quarterly. (C)

25. EDUCATION, MEDICAL

Medical Education in the United States, 1934-1939, American Medical Association Press, Chicago, 1940, 259 pages.

Prepared for the Council on Medical Education and Hospitals of the American Medical Association. (C)

Graduate Medical Education, University of Chicago Press, Chicago, 1940, 304 pages.

Report for the Commission on Graduate Medical Education. The ultimate object of this report is to stimulate greater interest in the whole field of graduate medical education so that there will be a well-prepared educational content of the internship and residency, resulting in a better trained doctor with a keener desire to keep abreast of the developments in medical practice and with a clearer realization that medical education is a continuous process extending throughout the physician's lifetime. J. Pediat. **17:** 278, 1940. (C)

26. ELECTROENCEPHALOGRAPHY

Atlas of Electroencephalography, Gibbs, Frederic A., M.D., and Gibbs, Erna L., Privately published, Boston, 1940, 221 pages.

Furnishes eye training for the beginner in electroencephalography so that he may have an appreciation of the range of normal and be able to recognize more or less obvious abnormalities; provides a text which describes the technic of electroencephalography and gives sufficient information to make the figures understandable; furnishes the expert with a compact and yet fairly complete set of sample electroencephalograms for teaching and reference. J. A. M. A. **117:** 233, 1941. (C)

27. EMBRYOLOGY

A Manual of Embryology: The Development of the Human Body, Frazer, J. Ernest, D.Sc., Baillière, Tindall & Cox, London, ed. 2, 1940, 523 pages.

Gives a connected mental picture of the developing embryo rather than a patchy series of discrete descriptions of the formation of organs. Makes use of the regional method. J. A. M. A. **117:** 233, 1941. (C)

28. ENDOCRINOLOGY

Endocrine Therapy in General Practice, Sevringhaus, E. L., M.D., The Year Book Publishers, Chicago, ed. 3, 1940, 239 pages.

To assist the physician who desires to present more rationally as well as successfully those patent products derived from the glands of internal secretion. No attempt has been made to include the refinements which will be of interest to those who give special attention to endocrine diagnosis and treatment. A new chapter in the endocrine problems of children and adolescents has been added. (E)

Essentials of Endocrinology, Grollman, Arthur, M.D., J. B. Lippincott Co., Philadelphia, 1941, 480 pages.

Brings together the subject matter dealing with the hormones for the average medical reader who requires a broader although necessarily less detailed survey of the subject. Correlates observations on human disease with experimentally established facts. (E)

Endocrinology (Journal), Lee, Milton, Managing Editor, Charles C Thomas, Springfield, Ill.

For the Association for the Study of Internal Secretions. Publishes experimental papers and occasional limited editorial review articles. Current volume, 28. Monthly. (C)

The Journal of Clinical Endocrinology, Editorial Committee, Charles C Thomas, Springfield, Ill.

For the Association for the Study of Internal Secretions. Original articles, selected abstracts, reviews, news and notes, and communications. Current volume, 1. Monthly. (C)

29. EUGENICS

Preface to Eugenics, Osborn, Frederick, Harper & Brothers, New York, 1940, 312 pages.

Sets forth briefly what science knows about heredity as a factor in individual differences. J. A. M. A. 116: 658, 1941. (C)

30. FOODS

Accepted Foods and Their Nutritional Significance, American Medical Association Press, Chicago, 1939, 492 pages.

Contains descriptions of those products which have been submitted to the Council on Foods and have been accepted. Includes the rules and regulations of the Council. (E)

31. GASTRO-ENTEROLOGY

An Introduction to Gastro-Enterology, Alvarez, Walter C., M.D., Paul Hoeber, Inc., New York, ed. 3, 1940, 778 pages.

Presents the modern physiologic approach to gastro-enterology. Supplies the clinician with a basic understanding of digestive tract phenomena seen in everyday practice and thereby points the way to sound diagnosis and treatment in this field. A delightful book to read because of the writer's attractive style. (C)

32. GENETICS

An Introduction to Medical Genetics, Roberts, J. A. Fraser, Oxford University Press, 1940, New York, 266 pages.

Follows the accepted plan of clinical teaching. Basic principles are restated fully, and on this foundation is built up not a recapitulation of the science of genetics, but an exposition of the applied science of medical genetics dealing with the human subject as observed in the community, in medical practice, and in the hospital. J. A. M. A. 115: 2020, 1940. (C)

Medical Genetics and Eugenics, Davenport, Charles B., Keeler, Clyde E., Slye, Maude, and Macklin, Madge Thurston, M.D., Woman's Medical College of Pennsylvania, Philadelphia, 1940, 141 pages.

Six lectures delivered at the Woman's Medical College of Pennsylvania. The growing appreciation of the significance of genetics, for its understanding of racial health and modern scientific medicine warrants the inclusion of this subject in the formal education of every physician. J. A. M. A. 116: 2448, 1941. (C)

Genetics (Journal), Rhodes, M. M., Editor, Genetics, Menasha, Wis.

Original articles only. Investigations bearing on heredity and variation. Current volume, 26. Bimonthly. (C)

33. GROWTH

Babies Are Human Beings, Aldrich, C. Anderson, M.D., and Aldrich, Mary M., The Macmillan Co., New York, 1938, 128 pages.

An attempt to select from the complicated processes revealed by many observers a few of the simpler and more relevant facts of growth and to present them as a means of understanding babies. There are no specific instructions nor formulas except where development furnishes its own formula; and since the book is of interest to parents and those who care for young children, technical language has been avoided. (E)

The First Five Years of Life: A Guide to the Study of the Preschool Child, Gesell, Arnold, M.D., et al., Harper & Brothers, New York, 1940, 393 pages.

Emphasizes the organic continuity which binds the preschool years with the period of infancy. Gives due status to the first year of life and indicates that identical principles of growth and of guidance apply to infant, toddler, run-about, and school beginner. Am. J. Dis. Child. 60: 1009, 1940. (E)

The Measurement of Man, Harris,* J. A., Jackson, C. M., M.D., Paterson, D. G., and Scammon, R. E., University of Minnesota Press, Minneapolis, 1930, 215 pages.

Four lectures present a number of points in growth and endocrinology. They have as a common purpose the discussion for the layman and doctor of quantitative methods applied to the study of man. (C)

The Growth of Bone, Muscle and Overlying Tissues As Revealed by Studies of Roentgenograms of the Leg Area, Stuart, Harold C., M.D., Hill, Penelope, and Shaw, Constance, Monograph of the Society for Research in Child Development, Vol. 6, Serial No. 26, No. 3, National Research Council, Washington, D. C., 1940, 190 pages.

Studies from the Clinic for Research in Child Health and Development, School of Public Health, Harvard University. (C)

Growth (Journal), Berrill, John, Editor, McGill University, Montreal.

For the coordination of studies of increase and development as general properties of nature. The field of investigation is primary, and work is published in which the approach is through mathematics, physics, chemistry, genetics, embryology, philosophy, and anthropology just as will studies of development in its several expressions, and of mass increase and the part played therein by nutrition, vitamins, and hormones. Current volume, 5. (C)

34. HEALTH EDUCATION

Food, Nutrition and Health, McCollum, Elmer Verner, Ph.D., and Becker, J. Ernestine, M.A., Privately published, Baltimore, ed. 5, 1940, 127 pages.

Presents the established facts about nutrition in nontechnical language and shows what can and what cannot be accomplished through diet. Points out some of the common fallacies about diets which have done and are still doing much harm to credulous and uninformed people. (C)

*Deceased.

Feeding the Family, Rose, Mary Swartz,* Ph.D., The Macmillan Co., New York, ed. 4, 1940, 421 pages.

Written to help those who regard their own health and that of their families as worthy of their best efforts and who recognize that while many things contribute to health, one of the most fundamental considerations is food. (E)

Health Education, National Education Association, Washington, D. C., 1941, 368 pages.

A guide for teachers prepared by the Joint Committee on Health Problems in Education of the National Educational Association and the American Medical Association. J. Pediat. **18:** 705, 1941. (C)

35. HEMATOLOGY

Principles of Hematology, Haden, Russell L., M.D., Lea & Febiger, Philadelphia, ed. 2, 1940, 362 pages.

Discusses disorders of the blood as disturbances in the normal physiology of the constituents of the blood instead of from diseases. (C)

36. HEREDITY

Journal of Heredity, Cook, Robert C., Managing Editor, The American Genetic Association, Washington, D. C.

For the American Genetic Association. Devoted to promoting a knowledge of the laws of heredity and their application to the improvement of plants, animals, and human racial stocks. Articles, notes, reviews. Current volume, 32. Monthly. (C)

37. HISTOLOGY

A Textbook of Histology, Jordan, Harvey Ernest, Ph.D., D. Appleton-Century Co., New York, ed. 8, 1940, 690 pages. (C)

38. HISTORY OF MEDICINE

Castiglioni's A History of Medicine, Edited by Krumbhaar, Edward B., M.D., Alfred A. Knopf, Inc., New York, 1941, 1013 pages.

Of both practical and recreational value. The erratic course that our profession has followed, its blind alleys and pitfalls, the methods of thought, observation, and experience that have proved profitable or fallacious in the past—comprehension of these should aid many of us today in recognizing the broader problems of the moment and in devising methods for their solution. J. A. M. A. **116:** 2823, 1941. (C)

Pediatrics of the Past, Ruhräh, John, M.D., Paul B. Hoeber, Inc., New York, 1925, 592 pages.

An anthology. Describes important individuals and the medical times in which they live. Frequent quotation of the original works with comments and annotations by the author. Necessary and delightful reading with Doctor Ruhräh on every page. (E)

*Deceased.

The History of Paediatrics, A Progress of the Study of Diseases of Children Up to the End of the XVIIIth Century, Still,* Sir George Frederick, London, Oxford University Press, New York, 1931, 526 pages.

It is good to know the past of medicine; its failures and its follies, its strivings and its successes. They are chastening and stimulating; and if this work serves to encourage study of this subject and to help any who are investigating the particular department of medicine with which the book deals, it will have accomplished its purpose. (E)

History of Contagious Disease Care in Chicago Before the Great Fire, Webb, Constance Bell, University of Chicago Press, Chicago, 1940, 169 pages.

An account of Chicago's early efforts to curb epidemics and to establish an efficient public health program. J. A. M. A. 116: 2824, 1941. (C)

Medical Classics (Journal), Compiled by Kelly, Emerson Crosby, M.D., Williams & Wilkins Co., Baltimore.

Current volume, 4. Ten issues annually. (C)

Annals of Medical History (Journal), Packard, Francis R., M.D., Editor, Paul B. Hoeber, Inc., New York.

Original articles, editorials, news and comment, book reviews. Current volume, 3. Third series. Bimonthly. (C)

Bulletin of the History of Medicine (Journal), Siegrist, Henry E., M.D., Editor, Johns Hopkins Press, Baltimore.

For the American Association of the History of Medicine and the Johns Hopkins Institute of the History of Medicine. Original articles, news, abstracts. Current volume, 10. Ten issues annually. (C)

39. IMMUNOLOGY

Journal of Immunology, Coca, Arthur F., M.D., Editor in Chief, Williams & Wilkins Co., Baltimore.

For the American Association of Immunologists. Original articles only. Current volume, 41. Monthly. (C)

40. INFECTION

Journal of Infectious Diseases, Taliaferro, William H., Editor, University of Chicago Press, Chicago.

For the John D. Rockefeller-McCormick Memorial Fund, University of Chicago. Devoted to the publication of original investigations dealing with the general phenomena, causation, and prevention of infectious diseases. Aims to occupy a special field and to include only such contributions as bear with reasonable directness on the topics indicated in the text. The biology and chemistry of the various pathogenic organisms, the physiology and anatomy of the morbid process that they initiate, and the hygienic and sanitary problems to which they give rise are considered to be especially within the scope of the undertaking. Original articles only. Current volume, 68. Bimonthly. (C)

*Deceased.

41. MEDICINE, GENERAL

A Textbook of Medicine, Cecil, Russell L., M.D., et al., W. B. Saunders Co., Philadelphia, ed. 5, 1940, 1744 pages.

J. A. M. A. **115:** 2204, 1940. (E)

The Practice of Medicine, Meakins, Jonathan Campbell, M.D., The C. V. Mosby Co., St. Louis, 1940, 1430 pages. (C)

Rheumatic Fever. Studies of the Epidemiology, Manifestations, Diagnosis and Treatment of the Disease During the First Three Decades, Wilson, May G., M.D., Commonwealth Fund, New York, 1940, 595 pages.

Presents in a systematic way the author's observations and the factual information obtained relative to this disease. Not a textbook nor a comprehensive critical review. Am. J. Dis. Child. **60:** 1450, 1940. (C)

Bacillary and Rickettsial Infection, Acute and Chronic, Holmes, William H., M.D., The Macmillan Co., New York, 1941, 676 pages.

Deals with bacillary and rickettsial infections only. Emphasis on the social, medical, and historic phases of each infection. A most unusual text; there should be more like it. (C)

Brucellosis in Man and Animal, Huddleston, I. Forest, D.V.M., Commonwealth Fund, New York, 1940, 337 pages.

Takes up the general clinical aspects of the disease, making it more attractive and useful to the medical practitioner as well as to the laboratory worker. J. Pediat. **17:** 472, 1940. (C)

Journal of the American Medical Association, Fishbein, Morris, M.D., Editor, American Medical Association Press, Chicago.

Covers all the medical sciences and matters of general medical interest. Current volume, 117. Weekly. (E)

Medicine (Journal), Chesney, Alan M., M.D., Managing Editor, Williams & Wilkins Co., Baltimore.

Analytical reviews of general medicine, neurology, and pediatrics. Current volume, 19. Quarterly. (E)

Archives of Internal Medicine (Journal), Gilbert, N. C., M.D., Chief Editor, American Medical Association Press, Chicago.

For the advancement of scientific medicine in the United States and for the reporting of research and observation in the domain of internal medicine. Original articles, reviews. Current volume, 67. Monthly. (E)

American Journal of Medical Sciences, Krumbhaar, Edward B., M.D., Editor, Lea & Febiger, Philadelphia.

Original articles, proceedings, reviews, abstracts, book reviews. Current volume, 202. Monthly. (C)

Journal of Clinical Investigation, West, Randolph, M.D., Editor, Science Press Printing Co., Lancaster, Pa.

For the American Society for Clinical Investigation. Designed for the publication of original investigations dealing with or bearing on the problems of disease in man. Original abstracts only. Current volume, 20. Bimonthly. (C)

Journal of Experimental Medicine, Flexner, Simon, M.D., and Gasser, Herbert S., M.D., Editors, Williams & Wilkins Co., Baltimore.

For the Rockefeller Institute for Medical Research. Original articles only. Current volume, 74. Monthly. (C)

42. MENTAL HYGIENE

Mental Hygiene (Journal), Stevenson, George S., M.D., Editor, National Committee for Mental Hygiene, Inc., Albany, New York.

Aims to bring dependable information to anyone who is interested or whose work brings him into contact with mental problems. Original articles, book reviews. Current volume, 25. Quarterly. (E)

43. MISCELLANEOUS

The Patient as a Person, Robinson, G. Canby, M.D., Commonwealth Fund, New York, 1939, 423 pages.

A study of the social aspects of illness. Based upon information obtained directly from individual patients, from their own accounts of the circumstance of their lives, and from observing them in the hospital and in their homes. Consideration of these patients with their many human problems in an effort to understand them, not only as individuals presenting symptoms and physical evidence of illness, but also as personalities living under particular social conditions, has led to the concepts and convictions that are presented and discussed. (C)

Convalescent Care, New York Academy of Medicine, New York, 1940, 261 pages.

Proceedings of the Conference on Convalescent Care held under the Auspices of the Committee on Public Health Relations of the New York Academy of Medicine. Prompted by the recognition of the fact that convalescence is a sadly neglected field of medical care. (C)

The Social Relations of Science, Crowther, J. G., The Macmillan Co., New York, 1941, 697 pages.

Traces the relation of science to civilization through all the periods of development of man. Leads up to the organization of science today and what may be expected in the future of this troubled world. (C)

Medical Writing, The Technic and the Art, Fishbein, Morris, M.D., American Medical Association Press, Chicago, 1938, 212 pages.

With a view to assist in the literary improvement of papers accepted for publication in its periodicals, the American Medical Association has adopted certain rules of style. These rules of style are incorporated in this book with the hope that they will be helpful to authors in the preparation of their articles. (C)

The Art of Useful Writing, Pitkin, Walter B., The McGraw-Hill Book Co., New York, 1940, 261 pages.

To help authors to train themselves to write up useful material so that it will be interesting and effective. Covers the four main aspects of practical writing; its logic, psychology, economics, and business. Written in a popular style by the author of *The Art of Rapid Reading.* J. A. M. A. **115:** 2306, 1940. (C)

Publications of the II White House Conference on Child Health and Protection, D. Appleton-Century Co., New York, 1933.

This series of thirty-five books is full of information of importance, and several of them are indispensable. Without exception, those of Section I, Medical Service, particularly the Report of the Subcommittee on Growth and Development consisting of four volumes, should be in every reading and reference library.

Section I: Medical Service. Hamill, Samuel McC., M.D., Chairman. Committee on Medical Care for Children. VanIngen, Philip, M.D., Chairman.

1. **Body Mechanics: Education and Practice, Osgood, Robert D., M.D.,** Chairman, Subcommittee on Orthopedics and Body Mechanics, p. 166.
2. **Fetal, Newborn and Maternal Morbidity and Mortality, Growth and Development of the Child, Blackfan, Kenneth D., M.D.,** Chairman, Subcommittee on Growth and Development.
3. **Part I. General Considerations,** p. 337. (E)
4. **Part II. Anatomy and Physiology,** p. 629. (E)
5. **Part III. Nutrition,** p. 531. (E)
6. **Part IV. Appraisement of the Child,** p. 344. (E)
   (a) Mental Status
   (b) Physical Status
7. **Health Protection for the Preschool Child, Palmer, George Truman, Ph.D.,** Chairman, Subcommittee on Statistics, p. 275.
8. **Hospitals and Child Health, Grulee, Clifford G., M.D.,** Chairman, Subcommittee on Hospitals and Dispensaries, **Lambert, Adrain V. S., M.D.,** Chairman, Subcommittee on Convalescent Care, **Cowan, Ida M., R.N.,** Chairman, Subcommittee on Medical Social Service, p. 279.
9. **Nutrition Service in the Field and Child Health Centers: A Survey,** p. 196.
10. **Obstetric Education,** p. 302.
11. **Pediatrics: Education and Practice, Veeder, Borden S., M.D.,** Chairman, Subcommittee on Medical Education, p. 117.
12. **Psychology and Psychiatry in Pediatrics: The Problem, Crothers, Bronson, M.D.,** Chairman, Subcommittee on Psychology and Psychiatry, p. 146.

Section II: Public Health Service and Administration, Cummings, Hugh S., M.D., Chairman.

13. **Communicable Disease Control, Bigelow, George H., M.D.,** Chairman, Subcommittee on Communicable Disease Control.
14. **Public Health Organization.**
15. **Milk Production and Control.**

Section III: Education and Training, Kelly, F. J., Ph.D., Chairman.

16. **Adolescent in the Family, Stanley, Louis, Ph.D.,** Chairman, Subcommittee on Family and Parent Education.
17. **Administration of the School Health Program, Wood, Thomas D., M.D.,** Chairman, Subcommittee on the School Child.
18. **Child Labor.**

19. **Children's Reading.**
20. **Education for Home and Family Life.**
    (a) In Elementary and Secondary Schools
    (b) In Colleges
21. **Home and School Cooperation.**
22. **The Home and the Child.**
23. **Nursery Education.**
24. **Parent Education.**
25. **Safety Education in Schools.**
26. **The School Health Program.**
27. **Social Hygiene in Schools.**
28. **Special Education: The Handicapped and the Gifted.**
29. **Summer Vacation Activities of the School Child.**
30. **Vocational Guidance: Principles and Practice.**
31. **Young Child in the Home.**

Section IV: The Handicapped: Prevention Maintenance. Protection, Carstens, C. C., Ph.D., Chairman, Committee on Physically and Mentally Handicapped.

32. **The Delinquent Child, Cabot, Hon. Frederick P.,** Chairman, Subcommittee on Socially Handicapped-Delinquency.
33. **The Handicapped Child.**
34. **Organization for the Care of Handicapped Children.**
35. **Dependent and Neglected Children.**

Proceedings of The III White House Conference on Children in a Democracy, Department of Labor, Children's Bureau Publication, No. 266, Division of Public Documents, U. S. Government Printing Office, Washington, D. C., 1941, 85 pages. J. Pediat. **18:** 287, 1941. (C)

Science (Journal), Cattell, McKeen, Editor, The Science Press Printing Co., Lancaster, Pa., and New York.

For the American Association for the Advancement of Science. Miscellaneous articles and current information in the field of general science. Current volume, new series No. 94. Weekly. (C)

44. NEONATAL PERIOD

Fetal and Neonatal Deaths, Potter, Edith L., M.D., and Adair, Fred L., M.D., University of Chicago Press, Chicago, 1940, 207 pages.

A survey of the incidence, etiology, and anatomic manifestations of the conditions producing death of the fetus in utero and the infant in the early days of life. About two-fifths of the deaths occurring before or during birth or in the first month of life might be avoided by the general application of knowledge now available. Shows some of the reasons for these deaths and presents material which may serve as a basis for further investigation. J. A. M. A. **116:** 84, 1941. (E)

Physiology of the Fetus, Windle, William Frederick, Ph.D., W. B. Saunders Co., Philadelphia, 1940, 249 pages.

Assembles and summarizes scattered physiologic observations on fetuses. Provides a supplement in embryology to stress functional aspects of development for those in allied fields who are interested in problems of behavior and who desire knowledge of prenatal physiology. J. Pediat. **18:** 288, 1941; Am. J. Dis. Child. **61:** 418, 1941. (E)

The Premature Infant, Its Medical and Nursing Care, Hess, Julius H., M.D., and Lundeen, Evelyn H., R.N., J. B. Lippincott Co., Philadelphia, ed. 2, 1941, 350 pages.

Presents something of the practical experience gained from work in the Premature Infant Station of the Sarah Morris Hospital. Coordinated with what medical science has to offer today. (E)

45. NEUROLOGY

Diseases of the Nervous System in Infancy, Childhood and Adolescence, Ford, Frank R., M.D., Charles C Thomas, Springfield, Ill., 1937, 953 pages.

Analyzes all available information about common neurologic disorders of childhood and develops a classification based primarily upon etiology with due emphasis upon clinical features rather than upon a purely anatomical classification, as is customary. Gives the essential clinical features of each condition with discussions. Includes all the conditions which occur in childhood, not merely those which are peculiar to childhood, and neurologic complications of diseases not primarily neurologic. (E)

The Principal Nervous Pathways, Rasmussen, Andrew Theodore, Ph.D., The Macmillan Co., New York, ed. 2, 1941, 73 pages.

Neurologic charts and schemas with explanatory notes on the more important nervous pathways in the central nervous system and their relations to the peripheral nerves. (C)

46. NUTRITION

The Newer Knowledge of Nutrition, McCollum, Elmer Verner, Ph.D., Orent-Keiles, Elsa, and Day, Harry G., The Macmillan Co., New York, ed. 5, 1939, 701 pages.

Interprets the meaning of the extensive experimental work relating to nutrition and described in numerous journals. Presents the subject matter in a form intelligible and useful to those who are interested in being informed on the present knowledge of nutrition. (E)

Fundamentals of Nutrition, Hawley, Estelle E., Ph.D., and Maurer-Mast, Esther E., M.D., Charles C Thomas, Springfield, Ill., 1940, 477 pages.

A compilation of discussions and technical data arranged in the hope of simplifying diet work whether for precise laboratory studies, for the moderately exacting regulation of sensitive diabetic metabolism, or for the broad problem of proper nutrition of whole populations at low cost. It is intended that the data included in each field shall prove to be an adequate working basis without the inclusion of cumbersome detail. (C)

Chemistry of Food and Nutrition, Sherman, Henry C., Ph.D., The Macmillan Co., New York, ed. 6, 1941, 611 pages.

Presents the principles of food chemistry and nutrition with such of the scientific facts as are deemed most important to an effective grasp of the subject. Food is considered chiefly in its relation to nutrition. (E)

19. **Children's Reading.**
20. **Education for Home and Family Life.**
    (a) In Elementary and Secondary Schools
    (b) In Colleges
21. **Home and School Cooperation.**
22. **The Home and the Child.**
23. **Nursery Education.**
24. **Parent Education.**
25. **Safety Education in Schools.**
26. **The School Health Program.**
27. **Social Hygiene in Schools.**
28. **Special Education: The Handicapped and the Gifted.**
29. **Summer Vacation Activities of the School Child.**
30. **Vocational Guidance: Principles and Practice.**
31. **Young Child in the Home.**

Section IV: The Handicapped: Prevention Maintenance. Protection, Carstens, C. C., Ph.D., Chairman, Committee on Physically and Mentally Handicapped.

32. **The Delinquent Child, Cabot, Hon. Frederick P.,** Chairman, Subcommittee on Socially Handicapped-Delinquency.
33. **The Handicapped Child.**
34. **Organization for the Care of Handicapped Children.**
35. **Dependent and Neglected Children.**

Proceedings of The III White House Conference on Children in a Democracy, Department of Labor, Children's Bureau Publication, No. 266, Division of Public Documents, U. S. Government Printing Office, Washington, D. C., 1941, 85 pages. J. Pediat. **18:** 287, 1941. (C)

Science (Journal), Cattell, McKeen, Editor, The Science Press Printing Co., Lancaster, Pa., and New York.

For the American Association for the Advancement of Science. Miscellaneous articles and current information in the field of general science. Current volume, new series No. 94. Weekly. (C)

44. NEONATAL PERIOD

Fetal and Neonatal Deaths, Potter, Edith L., M.D., and Adair, Fred L., M.D., University of Chicago Press, Chicago, 1940, 207 pages.

A survey of the incidence, etiology, and anatomic manifestations of the conditions producing death of the fetus in utero and the infant in the early days of life. About two-fifths of the deaths occurring before or during birth or in the first month of life might be avoided by the general application of knowledge now available. Shows some of the reasons for these deaths and presents material which may serve as a basis for further investigation. J. A. M. A. **116:** 84, 1941. (E)

Physiology of the Fetus, Windle, William Frederick, Ph.D., W. B. Saunders Co., Philadelphia, 1940, 249 pages.

Assembles and summarizes scattered physiologic observations on fetuses. Provides a supplement in embryology to stress functional aspects of development for those in allied fields who are interested in problems of behavior and who desire knowledge of prenatal physiology. J. Pediat. **18:** 288, 1941; Am. J. Dis. Child. **61:** 418, 1941. (E)

The Premature Infant, Its Medical and Nursing Care, Hess, Julius H., M.D., and Lundeen, Evelyn H., R.N., J. B. Lippincott Co., Philadelphia, ed. 2, 1941, 350 pages.

Presents something of the practical experience gained from work in the Premature Infant Station of the Sarah Morris Hospital. Coordinated with what medical science has to offer today. (E)

45. NEUROLOGY

Diseases of the Nervous System in Infancy, Childhood and Adolescence, Ford, Frank R., M.D., Charles C Thomas, Springfield, Ill., 1937, 953 pages.

Analyzes all available information about common neurologic disorders of childhood and develops a classification based primarily upon etiology with due emphasis upon clinical features rather than upon a purely anatomical classification, as is customary. Gives the essential clinical features of each condition with discussions. Includes all the conditions which occur in childhood, not merely those which are peculiar to childhood, and neurologic complications of diseases not primarily neurologic. (E)

The Principal Nervous Pathways, Rasmussen, Andrew Theodore, Ph.D., The Macmillan Co., New York, ed. 2, 1941, 73 pages.

Neurologic charts and schemas with explanatory notes on the more important nervous pathways in the central nervous system and their relations to the peripheral nerves. (C)

46. NUTRITION

The Newer Knowledge of Nutrition, McCollum, Elmer Verner, Ph.D., Orent-Keiles, Elsa, and Day, Harry G., The Macmillan Co., New York, ed. 5, 1939, 701 pages.

Interprets the meaning of the extensive experimental work relating to nutrition and described in numerous journals. Presents the subject matter in a form intelligible and useful to those who are interested in being informed on the present knowledge of nutrition. (E)

Fundamentals of Nutrition, Hawley, Estelle E., Ph.D., and Maurer-Mast, Esther E., M.D., Charles C Thomas, Springfield, Ill., 1940, 477 pages.

A compilation of discussions and technical data arranged in the hope of simplifying diet work whether for precise laboratory studies, for the moderately exacting regulation of sensitive diabetic metabolism, or for the broad problem of proper nutrition of whole populations at low cost. It is intended that the data included in each field shall prove to be an adequate working basis without the inclusion of cumbersome detail. (C)

Chemistry of Food and Nutrition, Sherman, Henry C., Ph.D., The Macmillan Co., New York, ed. 6, 1941, 611 pages.

Presents the principles of food chemistry and nutrition with such of the scientific facts as are deemed most important to an effective grasp of the subject. Food is considered chiefly in its relation to nutrition. (E)

The Journal of Nutrition, Cowgill, George R., Editor, Wistar Institute of Anatomy and Biology, Philadelphia.

For the American Institute on Nutrition. Publishes original researches in the field of nutrition and occasional reviews of literature on topics with which the Journal is concerned. Original articles only. Current volume, 20. Monthly. (C)

47. OFFICE MANAGEMENT

Gregg Medical Shorthand Manual (Dictation Series), Smither, Effie B., Gregg Publishing Co., New York, 1927, 191 pages.

Answers some of the questions that arise in the mind of the medical secretary and offers some well-tried suggestions to the ambitious worker in a very interesting but very exacting line of work. (E)

Standard Handbook for Secretaries, Hutchinson, Lois Irene, McGraw-Hill Book Co., Inc., New York, ed. 2, 1939, 616 pages.

A source of much information for general office work. A great deal of this has to do with improvement of literary style. (E)

The Medical Secretary, Morse, Minnie Genevieve, The Macmillan Co., New York, 1933, 162 pages.

Discusses the principal problems of both the nurse without secretarial training and the secretarial school graduate without medical education on assuming the duties of office assistant to a doctor. (E)

48. ORTHOPEDICS

Body Mechanics in Health and Disease, Goldthwait, Joel E., M.D., et al., J. B. Lippincott Co., Philadelphia, ed. 3, 1941, 316 pages.

Many chronic diseases are associated with faulty mechanics of the body. Most of these are due to a wrong use of the body which must have begun in childhood or early adult life. It is naturally desirable, therefore, to see that proper training of the body is given before the structures become misshapen or displaced. (C)

Diagnosis and Treatment of Postural Defects, Phelps, Winthrop Morgan, M.D., and Kiphuth, Robert J. H., Charles C Thomas, Springfield, Ill., 1932, 180 pages.

Utilizes knowledge from many fields and draws conclusions as to the correct postures and corrective measures from these fields in all types of individuals. (E)

Functional Disorders of the Foot, Dickson, Frank D., M.D., and Diveley, Rex L., M.D., J. B. Lippincott Co., Philadelphia, 1939, 305 pages.

Dwells at some length upon the foot in childhood and adolescence, as many of the faults in foot architecture which produce symptoms in the adult have their origin in the growing foot of the child and the developing foot during the adolescent period. As much more can be done to correct architectural faults responsible for the development of functional foot disorders between the ages of 2 and 16 years than after the adult age has been reached, this period of foot development seems worthy of careful study. (E)

Principles of Orthopedic Surgery, Sever, James Warren, M.D., The Macmillan Co., New York, ed. 3, 1940, 418 pages.

Not intended to be a textbook but to supply students and nurses with a knowledge of what orthopedic surgery comprehends and the most acceptable methods of treatment. Am. J. Dis. Child. **60:** 1008, 1940; J. A. M. A. **116:** 86, 1941. (C)

49. PARASITOLOGY

Clinical Parasitology, Craig, Charles Franklin, M.D., and Faust, Ernest Carroll, Ph.D., Lea & Febiger, Philadelphia, ed. 2, 1940, 772 pages. (C)

50. PARENT EDUCATION

Expectant Motherhood, Eastman, Nicholas J., M.D., Little, Brown & Co., Boston, 1940, 176 pages.

Accepted principles of prenatal care to serve as a sort of stenographic recapitulation of the doctor's main instructions to the expectant mother. Answers many of her questions so that her visit to the physician may be devoted more to the particular circumstances of the individual case. Am. J. Dis. Child. **60:** 1010, 1940. (E)

Let's Talk About Your Baby, Tenney, H. Kent, Jr., M.D., University of Minnesota Press, Minneapolis, ed. 2, 1940, 115 pages.

Talks of routine infant care and training for parents in a most unusual and interesting way. J. Pediat. **16:** 84, 1940; Am. J. Dis. Child. **60:** 1010, 1940. (E)

Growing Out of Babyhood, Sadler, William S., M.D., and Sadler, Lena K., M.D., Funk and Wagnalls Co., New York, 1940, 350 pages.

A handbook for parents on the psychologic, psychiatric, emotional, and social problems of the preschool child. Steers a middle-of-the-road course between the austere physiologic psychology and the overemphasis of the importance of affording the child a full feeling of security in the parental affection. J. Pediat. **18:** 706, 1941; Am. J. Dis. Child. **61:** 203, 1941; J. A. M. A. **117:** 494, 1941. (C)

Child Care and Training, Faegre, Marion L., and Anderson, John E., Ph.D., University of Minnesota Press, Minneapolis, ed. 5, 1940, 320 pages.

Extremely useful and sound discussion of the principles of child care and training for intelligent parents. J. Pediat. **17:** 860, 1940. (E)

Parents and Sex Education, Gruenberg, Benjamin C., Viking Press, Inc., New York, 1932, 112 pages.

For parents of young children, sanctioned by the American Social Hygiene Association. Assumes that the parent first must be informed and intelligent about sex education in order to answer children's questions adequately and to direct their attitudes into proper channels during their developing years, particularly the early years. (E)

Your Teeth, Their Past, Present, and Probable Future, Breckhus, Peter J., D.D.S., University of Minnesota Press, Minneapolis, 1941, 251 pages.

Presents a frank appraisal of existing information about children's teeth and their care. (E)

The Attractive Child, Foster, Constance J., Julian Messner, Inc., New York, 1941, 338 pages.

Reliable information for parents presented from a slightly different viewpoint of the usual book on child care, with particular emphasis on the cultivation of available assets, in an optimistic trend. A good deal of wholesome and desirable information. (E)

Born That Way, Carlson, Earl, R., M.D., The John Day Co., Inc., New York, 1940, 174 pages.

A story of a spastic cripple for anyone who is under a handicap of any kind—those who are deaf or blind or ill; those who are tired and worn or "nervous"; and even those who feel themselves beaten by society, by economic conditions, or by what they think is some failure in themselves. J. Pediat. **18**: 428, 1941; Am. J. Dis. Child. **62**: 221, 1941; J. A. M. A. **116**: 2823, 1941. (E)

A Right Book for the Right Child, Washburne, Carleton, The John Day Co., Inc., New York, 1936, 389 pages.

Selected and annotated by a subcommittee of the Committee on Library Work with Children of the American Library Association. Compiled to help parents, teachers, and librarians in the important but difficult task of selecting books suitable to the individual child. (E)

Play for Convalescent Children in Hospitals and at Home, Smith, Anna Marie, A. S. Barnes and Co., New York, 1941, 132 pages.

Shows what can be done with play when it is made an integral part of the convalescent care of children. A contribution to this really important side of medical care. J. Pediat. 19: 145, 1941. Am. J. Dis. Child. **62**: 472, 1940. (E)

The Wise Choice of Toys, Kawin, Ethel, University of Chicago Press, Chicago, 1938, 154 pages.

A guide to the selection of play materials, also in important phases of child training and child developments. (E)

Safe and Healthy Living, Primary Series, and Middle and Upper Grade Series, Andress, J. Mace, Ph.D., Goldberger, I. H., M.D., Dolch, Marguerite P., Jenkins, Elsie P., and Hallock, Grace T., Ginn and Co., Boston, 1939.

Eight volumes, one for each grade, of reading material carefully selected for grade levels of health instruction in a most acceptable form as collateral classroom work. (E)

Miscellaneous Bulletins for Parents, Department of Labor, Children's Bureau, Division of Public Documents, U. S. Government Printing Office, Washington, D. C. (C)

51. PATHOLOGY

A Textbook of Pathology, MacCallum, William G., M.D., W. B. Saunders Co., Philadelphia, ed. 7, 1940, 1302 pages. (E)

American Journal of Pathology, Weller, Carl V., M.D., Editor, American Journal of Pathology, Ann Arbor, Mich.

For the American Association of Pathologists and Bacteriologists. Original articles, abstracts. Current volume, 17. Bimonthly. (C)

Archives of Pathology (Journal), Hektoen, Ludwig, M.D., Chief Editor, American Medical Association Press, Chicago.

Original articles, case reports, proceedings, abstracts, news, book reviews. Current volume, 32. Monthly. (C)

American Journal of Clinical Pathology, Kilduffe, R. A., M.D., Editor, Williams & Wilkins Co., Baltimore.

For the American Society of Clinical Pathologists. Original articles, news and notes, book reviews. Current volume, 11. Monthly. (C)

52. PEDIATRIC TEXTS

Holt's Diseases of Infancy and Childhood, Holt, L. Emmett, Jr., M.D., and McIntosh, Rustin, M.D., D. Appleton-Century Co., Inc., New York, ed. 11, 1940, 1421 pages. (E)

The best book in any field of medicine. Am. J. Dis. Child. **61**: 203, 1941; J. A. M. A. **116**: 262, 1941. (E)

Textbook of Pediatrics, Griffith,* J. P. Crozer, M.D., and Mitchell,* A. Graeme, M.D., W. B. Saunders Co., Philadelphia, ed. 5, 1941, 991 pages.

J. Pediat. **18**: 842, 1941; Am. J. Dis. Child. **61**: 203, 1941; J. A. M. A. **116**: 262, 1941. (E)

The Compleat Pediatrician, Davison, Wilburt C., M.D., Duke University Press, Durham, N. C., ed. 3, 1940, 275 pages.

A tabular arrangement of pediatric diagnoses with differentiating symptoms and signs; also laboratory procedures and pertinent treatment. J. Pediat. **16**: 822, 1940; Am. J. Dis. Child. **60**: 1009, 1940. (C)

Practice of Pediatrics, Brennemann, Joseph, M.D., Editor in Chief, W. F. Prior Co., Inc., Hagerstown, Md., 1933, 4 Vol.

A system of pediatrics by many authors, kept abreast of a rapidly changing clinical field by current additions to the text. (C)

Lectures on Diseases of Children, Hutcheson, Sir Robert, M.D., and Moncrieff, Alan, M.D., Edward Arnold & Co., London, ed. 8, 1940, 471 pages.

One of the best of the English texts for those interested in a broader viewpoint of pediatrics. J. A. M. A. **117**: 574, 1941. (C)

*Deceased.

53. PEDIATRIC JOURNALS

Journal of Pediatrics, Veeder, Borden S., M.D., and McCulloch, Hugh, M.D., Editors, The C. V. Mosby Co., St. Louis.

For the American Academy of Pediatrics. Original articles, Academy proceedings, critical reviews, news, comments, book reviews. Current volume, 19. Monthly. (E)

American Journal of Diseases of Children, Grulee, Clifford G., M.D., Editor, American Medical Association Press, Chicago.

Original articles, progress in pediatrics, current abstracts, proceedings, news, book reviews. Current volume, 62. Monthly. (E)

FOREIGN

International

Annales Paediatrici (Journal), Freudenberg, E., Redactor, S., Karger, New York and Basel.

International Review of Pediatrics. Continuation of Jahrbuch für Kinderheilkunde. Original articles only in English, German, and French. Current volume, 157. (C)

Great Britain

Archives of Disease in Childhood (Journal), Moncrieff, Alan, and Ellis, Richard W. B., Editors, British Medical Association House, London.

Original articles. Current volume, 16. Monthly. (C)

British Journal of Children's Diseases, Rolleston, J. D., Editor, Adlard & Son, London.

Original articles, proceedings, correspondence, abstracts, reviews. Current volume, 38. Quarterly. (C)

Cuba

Archivos de Medicina Infantil (Journal), Inclan, Clemente, Director, Habana, Cuba.

Original articles, abstracts, notices. Current volume, 9. Quarterly. (C)

Boletín de la Sociedad Cubana de Pediatría (Journal), Aballi, Angel Arturo, and Hurtado, Felix, Directors, Habana, Cuba.

For the Catedra de Patologia y Clinica Infantiles Hospital "Mercedes." Original articles only. Current volume, 13. Monthly. (C)

Mexico

Revista Mexicana de Pediatria (Journal), Alarcón, Alfonso G., Director, Mexico, D. F.

For the Mexican Society of Pediatrics. Original articles. Current volume, 11. Monthly. (C)

Argentina

Archives Argentinos de Pediatria (Journal), Garrahan, Juan P., Director, Buenos Aires, Argentina.

For the Argentina Society of Pediatrics. Original articles, book reviews, abstracts, chronicles. Current volume, 12. Monthly. (C)

Brazil

Jornal de Pediatria (Journal), Rio de Janeiro, Brazil.

Chile

Revista Chilena de Pediatria (Journal), Goñi, Arturo, Baeza, Director, Santiago, Chile.

For the Chilean Society of Pediatrics. (C)

Uruguay

Archivos de Pediatria del Uruguay (Journal). Pelfort, C., Director, Montevideo, Uruguay.

For the Uruguay Society of Pediatrics. Original articles, summaries in English, proceedings, abstracts, notes. Current volume, 12. Monthly. (C)

Boletin del Instituto Internacional Americano de Protección a la Infancia (Journal), Berro, Roberto, Director, Montevideo, Uruguay.

Original articles, summaries in English, proceedings, book reviews, abstracts, information. Current volume, 14. Monthly. (C)

India

Indian Journal of Pediatrics, Chaudhuri, K. C., Editor, S. C. Sarkar and Lois, Ltd., Calcutta, India.

In English. Current volume, 8. Quarterly. (C)

The Netherlands

Maandschrift voor Kindergeneeskunde (Journal), Gorter E., Director, Hestenfert Kroese's Vitgevers-Maaetschappij n. v., Leiden, The Netherlands.

Original articles only; summaries in English. Current volume, 8. Monthly. (C)

Sweden

Acta Pediatrica (Journal), Jundell, I., Editor, Almquist & Wiksells, Uppsala.

Original articles in English, German, and French only; Summaries in English. Current volume, 28. (C)

France

Archives de Médecine des Enfants (Journal), Comby, J., Director, Masson & Cie, Paris.

Original articles, notes, reviews. Current volume, 43. Bimonthly. (C)

Revue Française de Pédiatrie (Journal), Editorial Committee for the Société de Pédiatrie de Paris, Gaston Doin et Cie, Paris.

Original articles, analytical reviews, proceedings. Current volume, 15. Bimonthly. (C)

Italy

La Pediatria (Journal), Jemma, R., Director, Naples.

Original articles, abstracts, book reviews. Current volume, 48. Monthly. (C)

Germany

Archiv für Kinderheilkunde (Journal), Müller, Erich, Editor, Ferdinand Enke, Stuttgart.

Original articles, proceedings, book reviews. Current volume, 122. Monthly. (C)

Ergebnisse der inneren Medizin und Kinderheilkunde (Journal), Czerny, Adelbert, Müller, F., v. Pfaundler, M., and Schittenhelm, A., Editors, Julius Springer, Berlin. (C)

Monatschrift für Kinderheilkunde (Journal), Czerny, Adelbert, and Bessau, Georg, Editors, F. C. W. Vogel, Berlin. (C)

Zeitschrift für Kinderheilkunde (Journal), v. Pflaundler, M., Moro, E., Rietschel, H., and de Rudder, Editors, Julius Springer, Berlin. (C)

54. PHARMACOLOGY

The Pharmacological Basis of Therapeutics, Goodman, Louis S., M.D., and Gilman, Alfred, Ph.D., The Macmillan Co., New York, 1941, 1383 pages.

Three objectives have guided the writing of this book—the correlation of pharmacology with related medical sciences, the reinterpretation of the actions and uses of drugs from the viewpoint of important advances in medicine, and the placing of emphasis on the application of pharmacodynamics to therapeutics. Offers an opportunity to the practicing physician to keep abreast of recent advances in therapeutics and to acquire the basic principles necessary for the rational use of drugs. J. A. M. A. **116**: 1991, 1941. (E)

55. PHYSICAL DIAGNOSIS

Diseases of the Chest and the Principles of Physical Diagnosis, Norris, George W., M.D., and Landis, H. R. M., M.D., W. B. Saunders Co., Philadelphia, ed. 6, 1938, 1019 pages. (C)

The text on principles of physical diagnosis is a most important reference, the presentation of diseases of the chest, meaning the heart and lungs, being less satisfactory than that found in the better pediatric books. (C)

56. PHYSICAL EDUCATION

Journal of Health and Physical Education, Mitchell, E. D., Editor, National Education Association, Washington, D. C. (C)

For the American Association for Health, Physical Education and Recreation. Articles, editorials, features, news. Current volume, 12. Ten issues annually. (C)

57. PHYSIOLOGY

Macleod's Physiology in Modern Medicine, Edited by Bard, Philip, Ph.D., The C. V. Mosby Co., St. Louis, 1941, 1256 pages.

Makes no pretense of being a textbook of "applied" physiology. Although it devotes a great deal of attention to clinical data, in general, clinical material has been invoked only when it illustrates particularly well fundamental physiologic principles. The book does not supply predigested knowledge suitable for immediate bedside application. (C)

Textbook of Physiology, Howell, William H., M.D., W. B. Saunders Co., Philadelphia, ed. 14, 1940, 1117 pages.

Succeeding editions record the advances in basic physiology discussing briefly the main principles with references for further study. (C)

Physiological Basis of Medical Practice, Best, Charles Herbert, M.D., and Taylor, Norman Burke, M.D., Williams & Wilkins Co., Baltimore, ed. 2, 1939, 1872 pages.

Serves to link the laboratory and the clinic and promote, therefore, continuity of physiologic teaching. (E)

Lymphatics, Lymph and Lymphoid Tissue, Drinker, Cecil Kent, M.D., and Yoffey, Joseph Mendel, M.D., Harvard University Press, Cambridge Mass., 1941, 406 pages.

Pictures the physiology and with it the clinical significance of the lymphatic apparatus in mammals. Describes first the anatomic and physiologic organization of the lymphatic system; then discusses the permeability of blood capillaries and its relation to lymph formation, the permeability of lymphatics, lymph flow and pressure, the chemical composition and physical characteristics of lymph, the biologic significance of lymph tissue, the cell content of lymph, and the significance of the lymphocyte. Concludes with a chapter devoted to clinical problems involving the lymphatic system. (C)

Feeding Our Old-Fashioned Children, Aldrich, C. Anderson, M.D., and Aldrich, Mary M., The Macmillan Co., New York, 1941, 112 pages.

Originally intended for a third edition of "Cultivating the Child's Appetite." An entirely new manuscript was gradually developed as a result of changes in the authors' view and in the controversial subject. The direction of thought is toward the children who do the feeding rather than to an absorption in food. J. Pediat. **18:** 705, 1941; Am. J. Dis. Child. **6:** 1351, 1941; J. A. M. A. **117:** 575, 1941. (E)

Feeding Behavior of Infants, Gesell, Arnold, M.D., and Ilg, Francis L., J. B. Lippincott Co., Philadelphia, 1937, 201 pages.

Emphasizes the functional and mental factors in the regulation of infant feeding and other problems of behavior hygiene. (C)

Physiological Reviews (Journal), Hooker, Donald R., M.D., Managing Editor, Baltimore.

For the American Physiological Society. To provide a concise but comprehensive review of the recent literature and to present status of various subjects in physiology, using this term in a broad sense to include biochemistry, biophysics, experimental pharmacology, and experimental pathology. Current volume, 21. Quarterly. (C)

American Journal of Physiology, Hooker, Donald R., M.D., Managing Editor, Williams & Wilkins Co., Baltimore.

For the American Physiological Society. Original articles only, proceedings. Current volume, 135. Monthly. (C)

58. PSYCHIATRY

Practical Clinical Psychiatry, Strecker, Edward A., M.D., Ebaugh, Franklin G., M.D., and Kanner, Leo, M.D., The Blakiston Co., Philadelphia, ed. 5, 1940, 728 pages.

Gradually, psychiatric insistence upon somatic-psychic unity has permeated medicine and all its specialties. Its validity has been recognized and its etiologic, diagnostic, and therapeutic considerations have been very fruitful. The term functional is now understood in its real and complete aspects and signifies a concept, considered about as frequently in internal medicine and in its specialized fields like gastro-enterology, dermatology, and others, as it is in psychiatry. The section on psychopathologic problems of childhood is by Dr. Kanner. J. A. M. A. **117:** 155, 1941. (C)

Child Psychiatry, Kanner, Leo, M.D., Charles C Thomas, Springfield, Ill., 1935, 527 pages.

Covers the entire field of children's personality disorders on a broad, objective, unbiased, and practical basis. (E)

Schizophrenia in Childhood, Bradley, Charles, M.D., The Macmillan Co., New York, 1941, 152 pages.

Following an initial discussion of what is meant by schizophrenia, with illustrations of how the disorder may appear in children, there is a short survey of the available literature and a systematic review of the various aspects of childhood schizophrenia. J. Pediat. **18:** 708, 1941; Am. J. Dis. Child. **62:** 222, 1941. (C)

Psychiatric Social Work, French, Lois Meredith, Commonwealth Fund, New York, 1940, 344 pages.

Presents the results of a study of psychiatric social work that was undertaken when the American Association of Psychiatric Social Workers realized the need to make available information concerning the field and function of this young and growing service. Am. J. Dis. Child. **61:** 660, 1941. (C)

Psychiatric Clinics for Children, With Special Reference to State Programs, Witmer, Helen Leland, Ph.D., Commonwealth Fund, New York, 1940, 435 pages.

Two findings of major importance have emerged from the study of the development of psychiatric services for children: (1) The need for such service is nationwide, and (2) the plans for psychiatric programs must be based on a thorough understanding both of the needs of children and of varying local conditions. (C)

59. PSYCHOLOGY

In Defense of Children, Beverley, Bert I., M.D., The John Day Co., Inc., New York, 1941, 233 pages.

The parent who is uncertain as to how to handle a given situation will be best advised to do nothing at all: A child left alone to work out his own problems will probably solve them better than his elders could. "In Defense of Children," therefore, reveals a wholesome faith in the child's human nature. (E)

In Defense of Mothers, Kanner, Leo, M.D., Dodd, Mead & Co., New York, 1941, 167 pages.

How to bring up children in spite of the more zealous psychologists "going forward with common sense." Answers the many recurrent almost stereotyped questions asked by parents, the truth being told laughingly. (E)

Normal Youth and Its Everyday Problems, Thom, Douglas A., M.D., D. Appleton-Century Co., Inc., New York, 1932, 368 pages.

Written for those interested in the training and development of youth. Particular emphasis has been placed upon the problems of that period of life which occupies the second decade. (E)

The Challenge of Adolescence, Wile, Ira S., M.D., Greenberg, Publisher, Inc., New York, 1939, 484 pages.

Stimulating discussion of many of the problems of this important pediatric period. (C)

The Doctor and the Difficult Child, Moodie, William, M.D., Commonwealth Fund, New York, 1940, 214 pages.

There is an informal discussion of fundamental disturbances of behavior or personality of children and how they can be recognized, investigated, and treated. Deals with some problems which lead parents to seek medical advice and the way in which the solution may be sought and remedies applied. J. Pediat. **18:** 427, 1941; Am. J. Dis. Child. **61:** 659, 1941; J. A. M. A. **117:** 574, 1941. (E)

Reading, Writing and Speech Problems in Children, Orton, Samuel Torrey, M.D., W. W. Norton and Co., Inc., 1937, 215 pages.

Since any disorder in the normal acquisition of spoken or written language serves as a severe hindrance to academic advancement and often also lies at the root of serious emotional disturbances, the studies here recorded may prove of interest to teachers and parents as well as to physicians. This presentation has been simplified in so far as its content would permit. (E)

The Psychological Aspects of Pediatric Practice, Spock, Benjamin, M.D., and Huschka, Mabel C., M.D., New York State Committee on Mental Hygiene, New York, 1940, 51 pages.

Reprint from The Practitioner's Library of Medicine and Surgery, Volume 13, pp. 757-808. J. A. M. A. **116:** 263, 1941. (C)

Emotion and Conduct in Adolescence, Zachry, Caroline B., and Lighty, Margaret, D. Appleton-Century Co., Inc., New York, 1940, 558 pages.

For the Commission on Secondary School Curriculum of the Progressive Education Association. Serves two purposes. From the analysis of life-adjustment tasks confronting adolescents and the discussion of their attempts to work these out, the reader may gain in understanding of his patient, and since throughout these pages the potential significance for education of relationships between adolescent and adult is manifest, the reader may gain added insights into his individual professional function in fostering the social development of boys and girls. (C)

The Adolescent Personality. A Study of Individual Behavior, Blos, Peter, Ph.D., D. Appleton-Century Co., Inc., New York, 1941, 517 pages.

For the Commission on Secondary School Curriculum, Progressive Education Association. The end product of a series of tentative formulations. The underlying purpose is to convey information and insight about adolescent development to people in general concerned with youth through the case history approach. (C)

Child Psychology for Professional Workers, Teagarden, Florence M., Ph.D., Prentice-Hall, Inc., New York, 1940, 641 pages.

Written from the nonmedical standpoint. The outgrowth of a course in child psychology for students, teachers, and workers. It is interesting for the doctor to be aware of how other workers approach this important question. J. Pediat. **18:** 287, 1941; Am. J. Dis. Child. **60:** 1233, 1940; J. A. M. A. **116:** 262, 1941. (C)

60. PUBLIC HEALTH

Preventive Medicine and Hygiene, Rosenau, Milton J., M.D., D. Appleton-Century Co., New York, ed. 6, 1935, 1506 pages. (C)

Hygeia (Journal), Fishbein, Morris, M.D., Editor, American Medical Association Press, Chicago.

Health magazine of the American Medical Association. Current volume, 19. Monthly. (E)

The Child (Journal), Department of Labor, Children's Bureau, Division of Public Documents, U. S. Government Printing Office, Washington, D. C.

To meet the need for an exchange of information between the Children's Bureau and the various agencies actively engaged in furthering the interests of children. It contains articles, brief reports, news items, and reviews of new publications relating to current developments in the fields of child health, child welfare, the prevention of delinquency, and the employment of minors in the United States. Current volume, 5. Monthly. (E)

School Life (Journal), Department of Interior, Office of Education, Division of Public Documents, U. S. Government Printing Office, Washington, D. C.

Reports trends in the field of education. Contains articles on health and physical education. Monthly. (C)

Public Health Reports (Journal), Public Health Service, Division of Sanitary Reports and Statistics, Division of Public Documents, U. S. Government Printing Office, Washington, D. C.

Contains (1) current information regarding the prevalence and geographic distribution of communicable diseases in the United States in so far as data are available and of other important communicable diseases throughout the world; (2) articles relating to the cause, prevention, and control of disease; and (3) other pertinent information regarding sanitation and the conservation of the public health. Current volume, 56. Weekly. (C)

American Journal of Public Health, Mustard, H. S., Editor, American Public Health Association, New York.

For the American Public Health Association. Original articles, editorials, book reviews, news. Current volume, 31. Monthly. (C)

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Roentgen Interpretations, Holmes,* George W., M.D., and Ruggles, Howard E., M.D., Lea & Febiger, Philadelphia, ed. 6, 1941, 364 pages.

J. A. M. A. **117**: 973, 1941. (C)

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Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association, American Medical Association Press, 1941, 181 pages.

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School Health Problems, Chenoweth, Laurence B., M.D., Selkirk, Theodore K., M.D., and Bolt, Richard Arthur, M.D., F. S. Crofts and Co., New York, ed. 2, 1940, 419 pages.

To acquaint students of education with the broad general nature of health problems in schools. Its goal is to develop health consciousness among teachers and pupils. The authors are concerned more with showing what problems exist in the field than with the technique of performing health examinations. Am. J. Dis. Child. **60**: 238, 1940. (E)

School Health Services, Walker, W. Frank, D.Ph., and Randolph, Caroline R., Commonwealth Fund, New York, 1941, 172 pages.

Results of six years' study of a large group of school children in rural districts under essentially constant conditions. J. Pediat. **19**: 287, 1941. (C)

64. STUDENT HEALTH

Proceedings of the American Student Health Association, Canuteson, Ralph L., Editor, Journal Lancet, Minneapolis, Minn. (C)

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Principles of Surgical Care, Blalock, Alfred, M.D., The C. V. Mosby Co., 1940, 308 pages.

This book is an extension and amplification of the Beaumont Lectures in Detroit for 1940. Presents a detailed consideration of the general surgical principles in operative treatment. It emphasizes the fact that the operation is only part of the treatment. The recent decreases in morbidity and mortality rates are due more to the advances in preoperative and postoperative treatment than to any other factor. (E)

Abdominal Surgery of Infancy and Childhood, Ladd, William E., M.D., and Gross, Robert E., M.D., W. B. Saunders Co., Philadelphia, 1941, 450 pages.

The details of pre- and postoperative care and of operative techniques and a statistical portrayal of experiences which have accumulated during the past twenty-five years are given. Sets forth personal observations and practices for those who must diagnose and treat abdominal conditions in infancy and childhood. (E)

66. THERAPEUTICS

Useful Drugs, Hatcher, Robert A., M.D., Editor, American Medical Association Press, Chicago, ed. 12, 1941, 268 pages.

For the Council on Pharmacy and Chemistry. An intelligent and critical use of these selected drugs will prove them of general sufficiency and show that many drugs now discussed in textbooks are superfluous and that many newly discovered, widely exploited proprietary preparations have no advantage over those contained in this book. (E)

New and Nonofficial Remedies, 1941, American Medical Association Press, Chicago, 1941, 656 pages.

Containing descriptions of the articles that stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1941. (E)

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Tuberculosis Among Children and Young Adults, Myers, J. Arthur, M.D., Charles C Thomas, Springfield, Ill., ed. 2, 1938, 401 pages.

Brings to date other knowledge of early diagnosis and treatment, then prognosis and prevention of tuberculosis among children. (E)

The Story of Clinical Tuberculosis, Brown,* Lawrason, M.D., Williams & Wilkins Co., Baltimore, 1941, 368 pages.

Lectures on the history of tuberculosis delivered for a number of years to the students of the Trudeau School of Tuberculosis. The book was prepared and published posthumously. (C)

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The Control of Tuberculosis in the United States, Jacobs,* Philip P., Ph.D., National Tuberculosis Association, New York, revised edition, 1940, 387 pages.

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Four papers entitled (1) "The Spread of Tuberculosis in Negro Families in Jamaica, B. W. I.," (2) "The Fate of Negro Persons of a Tropical Country, Jamaica, B. W. I., After Contact With Tuberculosis," (3) "A Survey of Tuberculosis Infection in a Rural Area of East Alabama," and (4) "The Fate of Persons Exposed to Tuberculosis in White and Negro Families in a Rural Area of East Alabama." (C)

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Intracranial Tumors of Infancy and Childhood, Bailey, Percival, M.D., Buchanan, Douglas, N., M.D., and Bucy, Paul C., M.D., University of Chicago Press, Chicago, 1939, 598 pages.

The basis of the study is an unselected series of one hundred consecutive cases verified by microscopic study of specimens obtained at operation or necropsy in infancy or childhood. Its goal has been to understand these tumors as they occur at this age period with the ultimate purpose of being able before operation to predict those which have a chance to be removed successfully. The cases are grouped and discussed in a manner most convenient to the clinician. (E)

Cancer in Childhood, and a Discussion of Certain Benign Tumors, Dargeon, Harold W., M.D., The C. V. Mosby Co., St. Louis, 1940, 114 pages.

Emphasizes cancer in childhood as one of the important children's diseases. A group of papers by different authors published originally as a symposium in The Journal of Pediatrics. J. Pediat. **16:** 677, 1940; Am. J. Dis. Child. **60:** 1010, 1940. (E)

69. UNITED STATES GOVERNMENT

Manual of the International List of Causes of Death and Manual of Joint Causes of Death, as Adopted for Use in the United States, Based on the Fifth Decennial Revision by the International Commission, Passed October 3-7, 1938. Prepared by Janssen, Theodore A., under the supervision of Dunn, Halbert L., Division of Public Documents, U. S. Government Printing Office, Washington, D. C., ed. 4, 1939, 444 pages. (C)

Selected List of Publications, Bibliography, No. 61, 1940, Department of Interior, Office of Education, Division of Public Documents, U. S. Government Printing Office, Washington, D. C. (C)

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1. Organization and Administration of School Health, Moore, Fred W., and Studebaker, John W., Bulletin No. 12, 1939.

2. State Supervisory Program for the Education of Exceptional Children, Mertens, Elsie H., Bulletin No. 6, 1940.

3. Teachers' Problems With Exceptional Children. II. Gifted Children, Mertens, Elsie H., Pamphlet No. 41, 1940.

4. State-Wide Trends in School Hygiene and Physical Education, Rogers, James Frederick, Pamphlet No. 5 (Revised), 1941.

5. Biennial Survey of Education in the United States, 1938-1940, School of Hygiene and Physical Education, Vol. I, Chapter VI, Rogers, James F.

Selected List of Publications, October, 1940, Department of Labor, Children's Bureau, Division of Public Documents, U. S. Government Printing Office, Washington, D. C. (C)

1. Recommended Standards for the Establishment and Maintenance of a Merit System of Personnel Administration and for Qualification of Certain Classes of Professional Employees in State and Local Agencies Administering Maternal and Child Health Services; Services for Crippled Children or Child Welfare Service. Special Information Circular No. 1.

2. Policies Adopted by the Children's Bureau as a Basis for Review of Provisions for a Merit System of Personnel Administration in State Plans. Special Information Circular No. 2.

3. Proceedings of the General Advisory Committee on Maternal and Child Welfare Services, March 4, 1940. Special Information Circular.

4. Grant to States for Maternal and Child Welfare, Publication No. 253.

5. Child Welfare Series Under the Social Security Act. Development of Program. 1936-1939, Publication No. 258.

6. The Child Health Conference. Suggestions for Organization and Procedure, Publication No. 261.

7. Maternity Care at Public Expense in Six Counties in New York State, Publication No. 267.

8. Care of the Children Coming to the United States for Safety Under the Attorney General's Order of July 13, 1940. Standards Prescribed by the Children's Bureau, Publication No. 268.

70. UROLOGY

Pediatric Urology, Campbell, Meredith, F., M.D., and Lyttle, John D., M.D., The Macmillan Co., New York, 1937, 1116 pages (2 volumes).

An encyclopedic work in a specialized field of growing importance in pediatrics. Especially significant since the relation between congenital anomalies of the kidney and hypertension is more established. The section on nephritis is by Dr. Lyttle. (E)

71. VIRUS AND VIRUS DISEASES

Virus and Virus Disease, Lane Medical Lectures, Rivers, Thomas M., M.D., Stanford University Publications, University Series, Medical Sciences, Vol. 4, No. 1, Stanford University Press, San Francisco, 1939, 133 pages.

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Virus and Rickettsial Diseases With Especial Consideration of Their Public Health Significance, Harvard University Press, 1941, 907 pages.

A symposium held at the Harvard School of Public Health, June, 1939, representing accurate and scholarly reviews of the literature on certain virus diseases, compiled and critically appraised by individuals competent by training and experience to analyze them with judgment. J. Pediat. **16:** 408, 1940. (C)

Infantile Paralysis, 1941, The National Foundation for Infantile Paralysis, Inc., New York, 1941, 239 pages.

A symposium of six lectures delivered at Vanderbilt University under the auspices of the National Foundation for Infantile Paralysis. Brings together a résumé of the present knowledge of the disease. (C)

Care of Poliomyelitis, Stevenson, Jessie L., R.N., The Macmillan Co., New York, 1940, 230 pages.

The book has grown out of the study, observation, and experience of the staff of the Orthopedic Division of the Visiting Nurse Association of Chicago. It is of special interest to the nursing profession and to all who are responsible in any way for the aftercare of children with poliomyelitis. (C)

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